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East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2005

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DEPUTY MINISTER EXAMINES WORLD ENERGY PROBLEM

Sofia ENERGETIKA in Bulgarian Feb 80 pp 3-7

[Article by Vasil Zanchev, first deputy minister of power supply: "The Energy Problem and the Prospects for its Resolution"]

[Text] "The energy problem is the most important of all problems ever faced by our civilization," said Mr J. Stanovnik, executive secretary of the Economic Commission for Europe (ECE),* at the opening of the first session of senior energy advisors to governments of ECE-member countries, held in Geneva from 29 October to 1 November 1979.

The establishment of a new work organ within the ECE to deal with general energy problems, as well as the participation of the delegations from 32 countries and representatives of 12 international organizations attending the first session emphasized the particular importance of the energy problem.

Each country reported to the session on the condition of its national energy systems and development possibilities through the end of the century. It was emphasized that energy problems cannot be resolved separately, that energy is the motor of economic activities in transportation, and the base for a high living standard, for which reason it is justifiably symbolically considered the blood of the economic organism.

The economic development of the world today is very closely linked with the power industry. Since the beginning of the 19th century the population on the earth has risen from one to four billion people, i.e., it has quadrupled. Overall output has increased by a factor of 30 while energy requirements by a factor of 600. Within that period mankind converted from wood, the basic energy source in the first half of the 19th century, to coal which assumed a leading position at the end of the century, and to liquid fuels which became the basic energy source after the

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* The ECE includes the European countries, the USSR, the United States, and Canada.

1960's. After 1973, as a result of the increase in the price of liquid fuels, the problems of safety, independence, and the cost of energy resources, and, hence, the development of the economy of the individual countries, were raised globally. Mankind began to realize the relatively limited nature of traditional energy resources and the need to secure energy not only for power but future generations as well.

Table 1[1] shows the conventional energy resources suitable for exploitation in 1976 and the number of years of their exploitation and exhaustion on the basis of increased consumption by one percent compared with the 1965-1973 period.

Table 1.

	Coal		Petroleum		Gas		Total	
	10^{18}J	Years	10^{18}J	Years	10^{18}J	Years	10^{18}J	Years
Europe	3450	167	99	2	162	7	3711	19
North America	5780	115	294	6	340	11	6414	36
ECE	11686	171	865	8	1347	16	13898	34
Global resources	16428	101	3930	17	2322	20	22680	35

Lignite predominates in the solid fuel deposits of our country. Per capita distribution is about 3.5 x 10^{12} J*, which is considerably below the average of 44 x 10^{12} J per capita on a global scale. Our petroleum and natural gas deposits are insignificant

The world's coal deposits are far larger and have been assessed at 296,710 x 10^{18} J. It is clear that the currently economically profitable deposits account for only six percent of the total. The trend throughout the world and in Europe is toward higher coal output. All socialist countries, the USSR and Poland in particular, are stipulating the development of coal extraction at a high rate. It is expected that the balance of coal reserves in the USSR will be quadrupled by the end of the century. Today 27 percent of the electric power produced in the USSR comes from coal and the share is growing at the expense of liquid fuels. At the same time, plans call for expanding the scale of processing brown coal for the production of resins and gaseous substances. A coal processing installation has been built in Krasnoyarsk. It will obtain 20 percent resins, 7 percent gas, and 73 percent semi-coke per one million tons of treated coal.

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* One ton conventional fuel equals 29.3 x 10^{9}J.

Greater attention and substantial funds are being allocated for the gasification and hydrogenation of coal in the FRG. A special program has been drafted to be discussed by the government starting with 1980. A special international symposium will be held on such problems in Vienna in 1980. In the United States the trend toward replacing oil with coal in electric power production is increasing. The ECE countries are turning, above all, to a maximum extraction of coal or coke and the development of electric power plants is based mainly on low caloric coal. Such electric power plants will be built in Great Britain, the FRG, Belgium, and others. In Spain, toward 1990 coal extraction will be increased by 15-16 percent; in Yugoslavia, starting with 1980, an annual growth of coal extraction of 1.75 percent is planned. Furthermore, the fruitful cooperation in the extraction of brown coal developed among Poland, Hungary, Yugoslavia, and Austria was emphasized at the session.

It is of interest to know that there are countries in Europe, such as Sweden and Switzerland, which neither extract nor use coal.

Increased coal production is particularly important to our country. It is planned that the extraction of local coal will be increased from seven million tons conventional fuel (205×10^{15} J) in 1978 to 15 million tons (440×10^{15} J) in 1990, and to 20 million tons (586×10^{15} J) in the year 2000. This program requires the adoption of timely measures to secure the necessary machines and financial and manpower resources.

In the case of petroleum, it is contemplated that after 1990 global production will begin to decline as a result of the exhaustion of resources. Consequently, liquid fuels must be used, in the future, essentially in transportation and the chemical industry, and for special purposes. The use of petroleum for the production of heat and electric power shall be restricted to a maximum extent. All countries, with the exception of the Soviet Union, are planning a reduction in petroleum extraction and imports. The members of the ECE have shown a strong desire to be free from the inconveniences related to imported petroleum. That is why in 1978 the FRG reduced its petroleum consumption eight percent and is planning a 50 percent reduction by 1990. The building of thermoelectric power plants using petroleum has been banned by law. In Denmark it is believed that petroleum consumption may be reduced by 30 percent, and in Spain by 20 percent by 1990. Greece expects the situation related to the amount and prices of petroleum to worsen. Predictions in Britain indicate that the 1980's will be years of maximum petroleum consumption and that by the year 2000 its price will have increased by a 2.5 factor. The high petroleum consumption and difficulties related to petroleum imports are forcing virtually all countries to seek possibilities to increase their own reserves and petroleum extraction. Austria is focusing on looking for petroleum at great depths, in excess of 8,000 meters, while Spain and Yugoslavia will explore under the bottom of the sea.

The Soviet Union is the only country in the world which can meet its energy requirements through its own resources and is exporting substantial quantities of gas, petroleum, and coal. The USSR is planning the intensification of petroleum extraction both through the development of new deposits and through increasing the petroleum extraction ratio. This indicator has currently reached 43 percent in USSR petroleum extraction, compared with a 35 percent global average.

It is believed in Canada that in 1990 it will be the country second only to the Soviet Union to achieve self-sufficiency in terms of energy resources. The current shortage of coal and petroleum will be compensated by natural gas and electric power.

Natural gas resources in the European area are considerably higher than those of liquid fuel. Despite this fact, after the year 2000 the production of natural gas will begin to decline due to exhaustion. Countries rich in natural gas, other than the USSR, are the United States, Canada, the Netherlands, and others. In addition to the socialist countries, the USSR supplies natural gas to Austria, Italy, the FRG, and others. A number of European countries are importing natural gas from Africa. Italy imports from Libya and is preparing imports from Tunisia and Algeria, while France will be importing from Algeria. Czechoslovakia and Austria are jointly developing a gas deposit.

The situation regarding uranium deposits is, to a certain extent, uncertain. Considering resources for reactors using heat neutrons alone, reserves of U-235, accounting for no more than 0.7 percent of natural uranium, will be exhausted very rapidly. The installation of fast neutron reactors will make it possible, on the one hand, to use the entire amount of extracted natural uranium and, on the other, will make economically profitable the mining of far poorer uranium deposits. In addition to the socialist countries, the United States, France, Belgium, the FRG, Spain, Denmark, Italy, and others are turning to the building of nuclear power plants. In this connection, however, difficulties of a subjective nature were emphasized, hindering the development of a nuclear power industry in Austria, Denmark, Italy, and the FRG. In some of these countries the reasons for opposing the nuclear power industry are of a political nature.

The development of the global economy and, respectively, of the power industry has been at a very high rate in recent decades. Despite this, the meeting of power requirements so far has not encountered basic difficulties.

These data indicate that energy resources of coal, petroleum, natural gas, and uranium are limited and that the contemporary energy problems cannot be resolved by converting from one type of energy to another, as was the case in the past, but through a general exchange process in which all surplus power resources should be most effectively utilized and new ones effectively sought.

Table 2[1] shows the meeting of energy requirements from various types of energy resources in 1955 and 1975, and the 1990 forecast for the socialist countries, the ECE members, and the world at large.

Table 2 shows that in the 20 year period between 1955 and 1975 a considerable decrease occurred in the use of coal at the expense of the use of better quality and, until recently, inexpensive energy from highly effective fuels. Due to the limited resources of petroleum and natural gas, measures are being taken to reduce their consumption and to limit it only to processes in which they are irreplaceable. This, however, requires time, as the result of which the percentage of liquid fuels and gas used will remain approximately unchanged until 1990. Toward the year 2000 liquid fuels will account for about 28 percent of the world energy balance.

The Table illustrates the growing significance of nuclear energy. Its share in the global energy balance will be increased from 5.9 percent in 1990 to 12.8 percent by the year 2000.

Hydraulic power is expected to retain its share of about five percent in the future as well. The sole exceptions will be the USSR, Yugoslavia, and Spain. The Soviet Union has about one trillion kilowatt hours of hydraulic resources of which only 17 percent are being currently used. Yugoslavia is planning to increase the power of its hydroelectric power plants by 40-50 percent until the end of the century.

The limited nature of power resources coming from coal, petroleum, natural gas, and uranium has triggered the development of extensive scientific research aimed at the practical utilization of new energy sources (solar, geothermal, and others). It is planned that by the year 2000 such sources will account for a bout 70 percent of overall global energy requirements.[2] Noteworthy in this respect are the measures taken

Table 2.

	1955		1975		1990	
	10^{15}J	Percent	10^{15}J	Percent	10^{15}J	Percent
Socialist Countries						
Solid fuels	15928	80,0	24856	42,2	36525	34,2
Liquid fuels	3098	15,6	18837	31,9	34265	32,1
Natural gas	615	3,1	13670	23,2	30052	28,2
Hydroelectric power	264	1,3	1393	2,4	3520	3,3
Nuclear electric power	--	--	155	0,3	2334	2,2
Total	19897	100,0	58911	100,0	106696	100,0
ECE Countries						
Solid fuels	45362	52,7	51914	27,3	80781	24,4
Liquid fuels	26340	30,6	81662	43,0	137999	41,8
Natural gas	10741	12,5	43640	22,9	71702	21,7
Hydroelectric power	3619	4,2	10022	5,3	17310	5,2
Nuclear electric power	--	--	2950	1,5	22726	6,9
Total	86062	100,0	190188	100,0	330518	100,0
Globally						
Solid fuels	53132	53,2	76828	30,3	130985	27,1
Liquid fuels	31068	31,1	111595	44,0	217681	45,0
Natural gas	11130	11,2	47831	18,9	81426	16,9
Hydroelectric power	4501	4,5	13884	5,5	24812	5,1
Nuclear electric power	--	--	3258	1,3	28558	5,9
Total	99831	100,0	253396	100,0	483462	100,0

by Italy and the FRG. Italy is working on the development of systems for the production of electric power based on solar energy; the FRG has appropriated funds for solar heat of buildings, based on thermostats.

Electric power is the most widespread type of energy. The linking of electric power systems and the trade, import, and export of electric energy are important means for resolving the energy problem. The electric power grids in Europe must become the blood circulation system of the European power industry and, thus, also a factor for strengthening the peace. Following the commissioning of the 750 kilovolt Vinitsa-Albertirsa electric power cable, the Mir joint power systems now have the electric power systems of Bulgaria, Hungary, the GDR, Poland, Romania, Czechoslovakia, and the European part of the USSR working on a parallel basis. Europe also has the NORDEL energy association which includes the power systems of Finland, Sweden, Norway, Denmark, and the isolated Icelandic power system, and the Union for Coordinating the Production and Transportation of Electric Power, which includes Austria, Belgium, the FRG, Italy, Luxembourg, the Netherlands, France, and Switzerland, along with four other attached countries--Greece, Spain, Portugal, and Yugoslavia. Individual connections exist between Eastern and Western countries such as, for example, between the USSR and Finland, Bulgaria, Yugoslavia, and Turkey, Hungary and Austria, and others.

The information supplied by virtually all countries which attended the Geneva meeting dealt extensively with the effective utilization of energy and energy resources. In the Netherlands, for example, it is planned that in 1985 electric power savings will reach 10 percent; they will rise to 20 percent in 1990 and 30 percent by the year 2000, compared with 1977. Soome countries such as Austria are reviewing their pace of development in connection with energy shortages.

The Soviet Union and the socialist CEMA-member countries are directing their efforts toward sensible energy conservation per unit of output and toward steadily improving the structure of their fuel and energy balances.

In Bulgaria the consumption of primary energy resources in 1975 reached 1,066.2 x 10^{15} J, averaging 122 x 10^9 J per person. The average power consumption per capita in the world that same year was about 67.4 x 10^9 J, or about one-half of ours.

Bulgaria's sources for this power consumption were the following:

- petroleum and natural gas extraction	0.8 percent
- hydraulic power	2.7 "
- nuclear power	2.8 "
- local solid fuels	23.9 "
- wood	0.5 "
- imported energy sources	69.3 "

We consider that 70 percent of our country's energy needs are met through import. This indicates the importance to our economy of the efficient and economical utilization of energy and the lowering of the pace of energy consumption in the future. This could be achieved by improving the structure of power consumption, lowering the share of power-intensive sectors and increasing the effectiveness of the utilization of fuels and energy. It is planned for the power-intensiveness of the national income to be reduced from 76 x 10^6 J/leva in 1978 to 61.5 x 10^6 J/leva in 1990. Despite this, however, it will remain considerably higher than the level reached by many other countries.

In the future the meeting of the energy requirements of the national economy will be achieved through the maximum utilization of our local energy resources and the implementation of an extensive program for the building of nuclear electric power plants. As a result of such an energy policy, it is planned that nuclear power will account for 16 percent in 1990 and 25 percent in the year 2000 of Bulgaria's overall power requirements. At the same time, the share of imported fuels will be reduced from 70 to 56 percent in 1990 and to 46 percent by the year 2000.

One of the most characteristic and lasting trends in the development of the structure of the fuel-energy balance in the world and in our country is the steady increase of the share of electric power. This is particularly important to our country in which the low caloric coals and nuclear and hydraulic power are included in the energy balance through electrification.

The energy policy must be formulated on a medium and long term basis. The tremendous capital investments in the power industry will yield immediate results but take 5 to 10 years. Consequently, the prospects must be based on a very clearly determined condition concerning the existence and development trends of resources, individual types of energy sources, and energy equipment and technologies related to the power industry developed by other countries.

It would be in the interest of all countries to resolve energy problems on the basis of most extensive international cooperation to be developed in several basic directions:

Broad exchange of information on energy resources and energy consumption (by sector, type of primary energy, connection between energy consumption and economic growth), and others;

Expanding cooperation in scientific research for the development of new power production technologies;

Expanding trade in energy technologies;

Joint development of energy projects, and others.

At the session, J. Stanovnik emphasized the following:

"A prosperous future could be achieved providing that the governments are able to mobilize capital funds, labor, knowledge, and technologies for the most efficient utilization of energy resources. This calls for a study of the energy condition, cooperation in the field of the development of power technologies, and a review of possibilities for trade in energy resources."

The energy problems of the European countries greatly vary in accordance with the specific nature of the individual states. However, the exchange of views confirmed the existence of many common unifying principles such as: the priority nature of the energy problem affecting all national economies today and in the future; the prime significance of rapidly limiting petroleum consumption, i.e., its gradual replacement with other energy carriers; the urgent nature of the policy of conservation and diversification of scarce imported resources replaced by local resources--solid fuel, nuclear power, and so on--as well as the utilization of new energy sources on a medium range basis; the importance and need for improving information on the condition of energy resources, official trends in the development of the power industry, and trade and basic capital investments; planning measures for the rational utilization of energy, including the joint production of thermal and electric power; broadening industrial cooperation in the field of the new methods for the extraction, production, and transportation of energy in all its forms; the great role of international cooperation in the development of energy problems; the great importance of the summit conference on energy within the framework of the ECE.

At the 31st ECE session, in 1976, the USSR called for convening high level conferences to resolve problems of environment, power industry, and transportation. The first--on environmental protection--was successfully held in Geneva, in November 1979. The convening of such a conference in the field of power industry is of exceptional importance to all countries, for with a thorough preparation of the problems of prime importance, their solution would benefit everyone.

The conditions and possibilities for cooperation in the field of power industry should be based on a joint evaluation of its possibilities and of experience acquired in accordance with existing agreements, paying particular attention to the possible expansion of industrial and scientific and technical cooperation, development of regional trade in energy resources, cooperation in the field of new technologies and new energy sources, and efficient energy utilization.

Our country cannot independently resolve the major and complex problems which its economic development program demands of the national energy complex. That is why the Bulgarian delegation to the session emphasized that Bulgaria supports the holding of high-level conferences within the ECE in the field of power industry aimed at upgrading possibilities for cooperation and broadening the integration between CEMA-member countries and all peace-loving nations. The high-level conference will make decisions and adopt documents to unify the efforts for the accelerated and effective search for means for the satisfaction of present and future energy requirements.

In the subsequent sessions of senior government advisors of European countries we shall firmly continue to support our position for the fastest possible holding of a high-level conference on power industry problems.

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CSO: 2200

BRIEFS

YUGOSLAV-ROMANIAN POWER COMMISSION--A regular session of the mixed Yugoslav-Romanian commission for the Iron gates has been held in Bucharest. It noted that the construction of the Iron Gates 2 Power Station is proceeding according to agreement. Experts were asked to prepare technical details so that the construction of a third power station on the Danube may be discussed. The commission also discussed the building of a railroad over the Iron Gates 2 Dam which would be the shortest link between Romania and the Adriatic. It was decided to replace the present 35 kilovolt powerline linking the two countries with a 110-kilovolt one. [Skopje NOVA MAKEDONIJA in Macedonian 20 Mar 80 p 4 AU]

YUGOSLAV-BULGARIAN ECONOMIC COOPERATION--Imer Pulja, member of the Federal Executive Council and president of the Yugoslav part of the mixed committee for economic and scientific-technical cooperation between the SFRY and the People's Republic of Bulgaria, yesterday received Rayko Nikolov, ambassador of the People's Republic of Bulgaria to Yugoslavia. Certain questions of the current economic cooperation between the two countries and the preparations for the 17th regular session of the mixed commission were discussed. [Text] [Belgrade BORBA in Serbo-Croatian 1 Apr 80 p 6 AU]

CSO: 2800

GERMAN DEMOCRATIC REPUBLIC

FUTURE TRENDS IN ENERGY MANAGEMENT OUTLINED

Leipzig ENERGIEANWENDUNG in German Vol 29 No 1, Jan-Feb 80 pp 1-4 manuscript received 12 Nov 79

[Article by State Secretary Heinz Ziergiebel, economist and engineer; chief, working group for efficient energy use, GDR Council of Ministers: "Management Tasks and Efficient Energy Use Planning in the GDR." Revised text of talk presented by the author at the Chamber of Technology's fifth meeting on "Efficient Energy Use" in Dresden, 13-14 Sep 79. A translation of an East Berlin EINHEIT commentary by the author is published under the heading, "Energy Conservation Seen More Important Than Investment Increase," in JPRS 75132, 14 Feb 80, No 1980 of this series, pp 10-14]

[Text] The Chamber of Technology's [KDT] fifth meeting on "Energy Use" carried on a fine tradition: active involvement aimed at economical and efficient energy use in our country's economy. Attesting to this tradition are the four preceding meetings -- the first of which took place as long as 15 years ago in 1964 -- as well as the KDT efforts to improve energy management in the young state enterprises, work that was begun even much earlier.

At each stage of the GDR's societal development the KDT has posed for itself questions of energy economy, and when on the 30th anniversary of the founding of the GDR we were able to strike a positive balance in terms of the efficient and economical use of energy in the economy as a whole, this was due in substantial measure to the imaginative and creative work of numerous KDT members and enterprise departments, especially in the approximately 420 enterprises recognized for their outstanding records in energy management.

Following the Seventh KDT Congress in November 1978, the chamber pushed even harder for a high level of energy use effectiveness in the entire economy. At its third session in April 1979, the KDT Presidium underscored its position on energy economy by declaring that the socialist organization of engineers "must significantly increase its efforts to implement the most modern technologies aimed at efficient energy use."

Full support of this statement is in order. Accelerated scientific-technical progress in the service of efficient energy use in all sectors of the economy is a key to a truly dynamic economy.

There are a number of reasons for the growing economic importance of efficient use of energy:

1. Prices for energy imports are continuing to rise. Between 1971 and 1979, for example, petroleum prices on capitalist markets increased tenfold and gasoline prices more than sevenfold, while hard coal prices nearly doubled. In line with the growing expenses involved in exploiting raw material resources, prices are rising on energy imports from the CEMA countries as well.

2. National economic outlays for raw materials and energy procurement account for about one-third of all investments in industry, and in the interests of proportional and dynamic growth of the economy as well as of the people's standard of living, this proportion cannot increase further.

3. Efficient energy use has proven more economical than the procurement of supplemental energy sources. Outlays for rationalization measures in energy-intensive processes have a return period of only 1.5 to 2 years. Calculations have revealed that rationalization in energy management is 4 times more beneficial to the economy than is the procurement of supplemental sources of energy.

4. It is the greater dimensions of energy use that are increasing the importance of efficient energy use. A 1-percent saving of electricity in 1979 was equivalent to a more than 5 percent greater amount of electric energy in 1950.

5. Efficient energy use can conserve supplies of fossile energy sources as well as protect man's biosphere by reducing adverse thermal and toxic effects on the environment. The economical and efficient use of energy also means that brown coal supplies can be made to last longer and be put to more effective use.

These are essential reasons why the realization of effective energy use in new dimensions is one of our foremost economic policy objectives.

If increasing prosperity for the people is to be assured, it is imperative that we work more intelligently and better, more economically and more productively -- in a word, we must have more effective management.

When directed toward efficient and economical energy use, scientific-technical progress can uncover energy reserves on a scale that will permit us to bring about further growth in production with minimal increases in primary energy consumption.

The improvement of management, planning and organization of the overall process of efficient energy use is assuming increasing importance. A concerted effort by all social forces aimed at accelerating the pace of scientific-technical progress and at the effective use of energy is of the utmost importance to the economy. By virtue of its accumulated store of knowledge and experience and direct effectiveness at the base level, in the enterprises and combines, the KDT has a special function and responsibility in this process of pushing the economical and efficient use of energy.

Looking back over the past 30 years since the founding of the GDR, one perceives that critical advances and results have been achieved in these three decades, also in the area of efficient energy use.

The economical use of energy has been one of our management principles as far back as the 1949-1950 Two-Year Plan and since the first five-year plan covering the period from 1951 to 1955. Efficient energy use has always been a dictate of intelligence in the GDR, not a sign of economic weakness. Years of work on the efficient use of energy have enabled us to gather abundant experience and information, especially as regards the management and planning of energy use.

We shall therefore continue to operate according to our country's tested principles of energy policy and energy management:

Maximum use of domestic raw material and fuel resources to meet the increasing demand for energy by the public and industry;

Further reduction of specific fuel and energy consumption in processes of energy conversion and use by means of socialist rationalization and the use of the latest findings in science and technology;

Expansion of socialist economic integration, particularly with the USSR and the other CEMA member-nations, in order to reinforce the energy base for societal development in the GDR.

One of the economic results achieved by these means is that it has been possible in recent years to increase the growth rate of the national income by more than 5 percent per year with an annual increase of about 2.5 percent in primary energy consumption. This is a favorable ratio on an international scale. The following comparison shows what this means to the GDR's societal development: In 1950, approximately 50,000 joules of primary energy had to be expended for every 1 million [marks] of national income produced. Production of the 1978 national income with the specific primary energy expenditure for 1950 would have taken about 2.5 times the primary energy actually required in 1978.

The specific primary energy expenditure per mark's worth of gross product in industry has been reduced by about 25 percent in the past 8 years.

Rationalization in energy management and an improved energy source structure since 1971 have brought energy savings equal to about 58 million tons of raw brown coal. The economic gain from this has been calculated to be approximately M 2.9 billion.

Recent years have seen a substantial reduction in utility energy intensity and electric energy intesity -- or specific energy consumption -- related to goods production. The average annual reduction for utility energy intensity has been 4.7 percent, with a 3.2-percent annual reduction for electric energy intensity.

The same holds true for results and advances with efficient and economical energy use, a fact that accounts for the general upward trend in the GDR economy in recent decades: Everything that has been achieved is an expression of the work and accomplishments, knowledge and skill and innovative spirit of millions of working people. The development of a mass initiative in the cause of economical and efficient energy use is also a crucial question for the quality of management work for the future. The guarantee for comprehensive, swift and at the same time lasting results lies in the development of socialist teamwork, which is a declared concern of the KDT, and in the unfolding of a mass working class movement for effective energy use.

The larger tasks of the new phase of development are to be undertaken in the spirit of building on the firm foundation of that which has already been achieved. The new dimensions and conditions are aptly served by the resolutions on energy management issues passed in 1979 by GDR party and government leaders.

They stipulate the goals and directions of the work and establish conditions that are essential to a mastery of the overall social process of energy supply, with its many and varied interdependencies and its present dimensions.

The task at hand is the broadest possible implementation of the principle of the strictest economy and supreme efficiency in dealing with energy; this is to be accomplished by the actions of managers and the initiatives of the working people, with emphasis on the following priorities:

Further increases in the energy efficiency of installations and technologies in all sectors of the economy, especially in the case of energy-intensive processes;

Development of installations, procedures and products that meet the highest scientific-technical standards for energy consumption;

Much more extensive use of residual energy, which will require close cooperation between enterprises and territorial organs.

The extent of existing reserves can be seen in the example of a study of 500 forge furnaces in 39 enterprises from various sectors.

The studies revealed that specific energy consumption to heat the furnaces regularly substantially exceeds the necessary and technically possible levels of specific energy consumption in normal enterprise operations. There are considerable reserves here that can and must be uncovered. At the same time, however, this example shows a basic direction for rationalization work, namely a regular and continuing rise in the energy efficiency of installations and technologies, for about 60 percent of the forge furnaces have either inadequate systems for preheating the air or none at all, and 40 percent are being operated without sufficient gauges.

Pointing in the same direction is the study of 92 industrial furnaces in the chemical industry. It showed avoidable heat losses of more than 12 percent of the utility heat used. In order to make use of these reserves, scientific-technical work must be done in these areas in particular:

Reduction of flue gas temperatures;

Improved thermal insulation;

Further development of measuring and control technology;

Improved burner designs.

In addition, new types of catalysts must be developed which allow reactions to take place at low pressures and temperatures. Also, substantial amounts of thermal energy are to be gained if the heat contained in the products can be recovered through recuperative convection and if improvements are made in measuring technology.

All efforts aimed at raising the energy efficiency of technologies and installations as well as at adhering precisely to the technological conditions for processes and installation operating procedures will result in a comprehensive reduction of specific energy consumption. Experience shows that progress has been made wherever challenging rationalization programs have been developed and resolutely implemented. At the Schwarzheide Synthetics Works VEB, for example, since 1975 it has been possible to reduce heat consumption per ton of polyisocyanate by 17 percent and specific electricity consumption for the same product by 19 percent.

Experience teaches that there are no grounds for the assumption that the many years of rationalization programs for enterprise energy management in industry have exhausted the energy reserves of the enterprises. It can be assumed that our most comprehensive experiences with the rationalization of energy management are in industry and that the outlook for energy reserves and their use in industry has been strengthened to the utmost.

Attention should therefore be directed toward examining all existing energy-consuming installations with a view to how to employ effectively energy sources that have hitherto not been used or not used enough.

The possibilities that exist are seen in the example of fuller's earth used in the production of lubricating oil. Until a few years ago, the large amounts of fuller's earth were considered to be an unusable residue from this kind of oil production. At great expense it was deposited in pits in the ground, a practice that involved high costs for excavation of the pits and protection of groundwater. The Luetskendorf Mineral Oil Works VEB has found a way to make use of the fuller's earth in a revolving cylindrical furnace to produce steam. This takes the place of between 50,000 and 60,000 tons of raw brown coal annually and constitutes an economic gain amounting to M 240,000. Fuller's earth proved suitable for mixing with the raw brown coal used in the enterprise's power plant and is reducing fuel consumption. In addition, it has been found that the fuller's earth is useful as an admixture to the material used to manufacture bricks because it reduces specific fuel consumption for the firing process as well as increases the thermal insulation properties of the bricks.

An area which will require special attention in the future is the efficient operation of engines. For instance, the total installed electric power of the economy's motor vehicle fleet exceeds by 4 or 5 times the installed power of GDR power plants. The engine power of motor vehicles belonging to the public -- converted to electric power -- is approximately on the same order. Total consumption of carburetor fuel is 8 times greater than the level of 1950; diesel fuel consumption is 13 times higher.

With respect to scientific-technical progress aimed at the more economical and more efficient use of energy, these processes will acquire growing significance in the future. In connection with implementation of the comprehensive social policy program and its major element, housing construction, increasing importance will accrue to efficient energy conversion and use in the communal and social area as well as among the people, as indicated by the following figures:

There were 35 automobiles for every 100 households in the GDR in 1977. High growth rates in the consumption of electricity, gas and remote heat sources in particular have resulted from the rapid and continuing increase in modern space heating as well as in the numbers of electric washing machines (78 per 100 households), refrigerators (95 per 100 households), various electric household appliances and radios and television sets (85 and 98 per 100 household, respectively). Household consumption of electicity has more than quadrupled since 1950.

The special concern of our socialist state for children and elderly citizens, for the health and recreation of all citizens, for basic and advanced education, as well as for many forms of cultural and sports activities, has led to a significant increase in the number of facilities for these endeavors and in the level of their accomplishments.

A substantial growth of energy use in these areas has accompanied development of the services, commerce and local supply sectors. Conclusions must be drawn from this for the rationalization of energy management. The comprehensive balance sheet on energy reveals the following energy use in the sectors mentioned:

A nearly 38-percent share of GDR motor vehicle fuel consumption;

A greater than 19-percent share of liquid fuels consumption;

A greater than 22-percent share of electricity consumption;

An approximately 25-percent share of solid fuels consumption.

A study by the Potsdam Bezirk Office for Efficient Energy Use reveals that the aforementioned sectors -- over which the local councils have particular influence -- account for almost half of the load (46 percent, to be precise) during the early-morning peak period of electricity consumption in the winter, which is between 0700 and 0800 hours. Industry's share is 38 percent, while the public uses 16 percent. Accordingly, needed in this sector are thorough studies on rationalization possibilities, measuring technology analyses and economic surveys that incorporate territorial aspects and arrive at well-thought-out conclusions, so that rationalization may be implemented swiftly and effectively.

Our experiences last winter also showed that substantial reserves still exist in the areas of space heating, lighting and the generation of heat.

On this basis and in line with the policy presented by General Secretary Erich Honecker in his closing remarks at the 10th SED Central Committee Plenum -- to the effect that the GDR's economic productive capacity must be strengthened through all-round, effective management and that care must be taken with our resources, above all with such costly items as electric energy, heat and fuels -- the party leadership and the government have decided on comprehensive measures which are designed to ensure in an even more comprehensive manner than before the most economical and most efficient use of all energy sources.

We can expect to a much greater extent than before the resolute development in all sectors of the economy of enterprises recognized for their outstanding records in energy management. And we must see to it that these enterprises influence many other enterprises and institutions in the branches and the country at large.

It has been, is now and will continue to be good socialist policy to develop these enterprises of outstanding energy management practices --

which now number 420 in all sectors of the economy, and which are to increase to 1,000 by the end of 1980 -- into real centers for the exchange of experiences, to convey their experiences, methods and rationalization solutions to as many other enterprises as possible. In other words, it is good socialist policy to apply the advantages of our social order effectively in this area as well. To qualify as an enterprise of outstanding energy management, an enterprise must systematically reduce specific energy consumption for the manufacture of its products, adhere strictly to balance sheet percentages and assure a high energy-efficiency rating for its products.

The efficient and economical use of energy is an integral part of the management and planning of production and the conduct of competitions in the enterprises of outstanding energy management practices. Innovators and efficiency experts focus on key areas in the rationalization of energy management; in-house capacities of the enterprises are used to produce rationalization means and to carry out construction plans.

Enterprises of outstanding energy management practices have established functional BMSR /industrial measuring, control and regulating technology/ systems and are using them for regular high-level work on technically and economically based energy consumption norms. Working people who operate energy-intensive installations are encouraged through material and nonmaterial incentives to meet and drop below the established values for energy consumption; they also receive regular instruction in this regard. The progressive work experiences with efficient energy use are carried over to other enterprises and facilities of the branch and the country at large. There is consistent organization of the subsequent application of rationalization options beyond the individual enterprise level.

The object is to bring other enterprises up to the level of the best ones as rapidly as possible, while at the same time organizing new advances in those enterprises that already have outstanding records in energy management. Nevertheless, with due respect to the achievements of these same enterprises and their discipline in using the planned and proportionally balanced volumes of energy sources, it cannot be overlooked that some enterprises and facilities are not meeting the state-imposed standards. In the future, government sanctions will be applied in such cases; they will amount to 10 times the price for the volume of energy sources drawn and consumed over and above the balance sheet percentages.

Occupying an important position are the measures designed to eliminate the wasting of thermal energy in supplying heat and hot water to residential buildings, social facilities and industrial buildings. This is especially important considering that this sector accounts for around 35 percent of the consumption of utility energy and that even overheating by 1 percent leads to excess energy consumption amounting to between 5 and 6 percent. Measures are aimed at achieving the following results:

1. Imposition of uniform maximum room temperatures for non-airconditioned industrial buildings and social facilities beginning with the 1979-1980 heating season; for example, between 10°C and 12°C for warehouses and between 12°C and 16°C for production areas where workers have to stand or move around;

2. As an interpretation of worldwide experience, the establishment of an interior temperature tolerance range of between 19°C and 21°C for residential buildings heated from remote sources;

3. Assurance of hot water temperatures of 45°C in order to avoid wasting energy in the case of central hot water supply systems;

4. Modification of heat supply systems so that heat may be cut back for residential buildings and social facilities at night.

Also included in the resolution are a number of measures that conform to the 9 June 1977 order on thermal energy and which have for some time been a subject of our consultations with the responsible authorities:

Detection and elimination of heating system weaknesses that cause overheating; reconditioning of fittings and controls; establishment of capacities for the repair and maintenance of regulating equipment;

Modification of heating circuits that either cannot be separated from one another at all or only insufficiently, so that they can be switched off for spaces that are unused or used only periodically;

Regulation of heating plants and their operation with regulators that depend on outside temperatures, or according to operating characteristics that depend on outside temperatures; assurance of on-the-spot instruction and training for employees assigned to the transfer and terminal stations.

To ensure the economical use of fuels in smaller and medium-sized boiler installations used to produce heat, fuel requirements are to be ascertained on the basis of heating index figures, and heating personnel are to be encouraged through the socialist competition and the wage system to meet or stay below these index figures.

The resolution also contains important measures on the economical use of electricity.

Among other things they are aimed at reducing existing and predominantly excessive levels of illumination on streets and squares, at construction sites and open-air storage areas, in supermarkets, department stores and shops and in enterprises and other facilities, while assuring order and safety. Important measures in this area are these:

Preparation and installation of circuits designed to save current by separating the switching circuits to permit lighting fixtures to be used singly or in groups;

The use of dimmer switches for construction sites, open-air storage areas, lobby and stairwell lighting in social facilities, residential buildings and other sites;

Reduction of overhead lighting and the consistent use of a combination of overhead and direct lighting of the work space to reduce lighting costs in enterprises, government offices and social facilities.

All new lighting systems that are under construction or planned for streets, squares, storage areas, construction sites and similar sites, as well as lighting for advertisements and official displays, are to be reviewed with an eye to reducing electrical hookups while considering their economic necessity and the established criteria for reducing lighting costs. Lighting systems for official displays and large-scale advertisements are to be installed only for selected sites with a view to economy.

The resolution also stipulates the revision of existing TGL's /GDR norms/, standards and project-planning regulations for new lighting systems for streets, squares and construction sites with the aim of further reducing demand for electricity.

We must now implement the measures that have been resolved without delay in all sectors, combines, enterprises and facilities, thus making an important contribution to a greater assurance of supply during the winter.

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CSO: 2300

GERMAN DEMOCRATIC REPUBLIC

NEW STRINGENT ENERGY CONSERVATION MEASURES ANALYZED

Bonn INFORMATIONEN in German No 3, Feb 80 pp 8-10

['Background' report by FRG Ministry for Inner-German Relations: "Short Energy Supply Compels GDR To Intensify Conservation." A Translation of the East Berlin NEUES DEUTSCHLAND article discussed below is published under the heading, "Waste, Inefficiency in Energy Use Criticized," in JPRS 75334, 19 Mar 80, No 1989 of this series, pp 100-103]

> [Text] On 29 January, the SED organ NEUES DEUTSCHLAND reported on a mass control by the Arbeiter-und-Bauern-Inspection (ABI) [worker and peasant inspectorate], published under the heading, "On New Measures of the 1980 Plan, Energy Conservation and Waste." This action was intended to check whether the resolutions by the Council of Ministers with regard to energy conservation are put into practice and what additional conservation measures could be applied in the future. The realization of these conservation measures will determine future opportunities for economic growth in the GDR more than has been the case in the past, because during the 11th meeting of the SED Central Committee in December of last year, Erich Honecker, SED general secretary, had announced indirectly that the Soviet Union would not increase its shipments of petroleum, natural gas and hard coal during the next five-year plan (1981-1985). Furthermore, additional increases in the cost of energy would force us "to draw comprehensive conclusions from these objective changes and to consider a few questions in a new light."

Honecker announced at the Central Committee meeting that between 1981 and 1985 the Soviet Union will ship to the GDR 95 million tons of petroleum, 32.5 billion cubic meters of natural gas and 21 tons of hard coal. Compared to the amounts shipped during the current five-year plan--the GDR is importing 88 million tons of petroleum, 21.6 billion cubic meters of natural gas and 21 million tons of hard coal--it means an increase of almost 15 percent.

If, however, these purchases are distributed evenly over 5 years, the annual amounts would be exactly the same as the USSR plans to export to the GDR in 1980.

In other words: Beginning with 1981, the GDR economy cannot count on additional energy shipment from the Soviet Union--according to calculations by the German Institute for Economic Research this amounts to approximately 85 percent of the GDR energy imports; USSR exports are stagnating at an annual rate of 19 million tons of petroleum, 65 billion cubic meters of natural gas and 4.2 million tons of hard coal.

In view of the price increases on the world market, it is not possible for the GDR to count on compensations for this stagnation with increased imports from Arab countries. Petroleum, which constitutes approximately 20 percent of the primary energy consumed in the GDR, will still not be available in larger quantities in the future.

Already during the summer of last year, Dr Gunter Friedrich of the Central Institute for Organic Chemistry at the GDR Academy of Sciences called attention to this when he wrote the following in DIE WIRTSCHAFT:

--"Today we know that until 1990 the amount of crude oil available for processing into petroleum will rise only insignificantly when compared to today."

The reasons for the stagnation in petroleum purchases are to be blamed, on one hand, on limited USSR supply capabilities and, on the other hand, on the drastic price increases of this raw material. Not long ago, O T Bogomolov, director of the Economic Institute of Socialist World Systems of the USSR Academy of Sciences, declared that there were limits to the growth of raw material and fuel exports by the USSR and that the slowdown in growth which has already become apparent will become more pronounced in the future.

On the other hand, the GDR is also forced to cut imports because of rising prices. Of course, on account of existing price-structure principles within CEMA (average world-market price of the preceding 5 years), the GDR can still buy Russian oil--approximately 90 percent of the current need--on relatively favorable terms; nevertheless, even here price increases were enormous. In 1970, for instance, the GDR paid 13.40 transfer rubles for 1 ton, compared to approximately 50 transfer rubles in 1978.

At the 11th Central Committee meeting, Erich Honecker figured the increase in cost in the following manner:

--"The proportional export of machinery and equipment, for instance, needed to pay for petroleum, has risen threefold since 1970."

Yet, there is no end in sight for these price surges, because the latest 100-percent increase in world market prices will affect CEMA nations only gradually during the next few years. Honecker's comment was: "We are not only dealing with a continuous worsening of a situation which is already complicated. We will be facing a new situation." Nevertheless, he continued, nobody can say "that the full impact of this situation, the facets of which are becoming more and more complicated, have already been understood everywhere and made the basis for actions."

Guidelines for Future GDR Energy Policies

In view of these worldwide changes, an increase in the energy supply through imports does not seem very likely. As a consequence, absolute priority must be given to the expansion of the supply within the GDR and to energy conservation.

In October 1979, Bernhard Kahn, director of the Institute for Energetics, summarized the guidelines for the GDR as follows:

"1. Maximal use of our domestic resources, particularly our own raw brown coal;

2. guarantee of efficient use of energy by increasing economical and technical utilization of the latest scientific findings as well as the creative initiative of our workers;

3. a step-by-step introduction or expanded use of new energy sources. It will be a result of close cooperation between all CEMA countries, particularly with the USSR. In the process, nuclear energy will play an increasing role."

Alternative energy sources (sun, wind, geothermal heat and tides) "are not expected to make a significant contribution during the next 20 years, considering the extent of their potential or the economic factors."

Since there are definite limits to increasing the mining of brown coal, energy conservation must assume a central role. According to figures presented by Kahn, during the last 10 years the GDR has already moved into a leading position in this area. Accordingly, a 1-percent increase in the national income required an increase in the use of energy of only 0.46 percent. On the other hand, Kahn also admitted: "Considering future demands and the options that are still available to us, it appears that this relationship is still in urgent need of improvement."

In this connection, Kahn also presented figures showing the increase, by percentage, in the absolute consumption of energy between 1968 (=100 percent) and 1978 according to individual categories:

--Transportation	70.3
--Industry	114.7
--Population	140.3
--Public sector	151.4
--Construction	160.6
--Agriculture, forestry and food industry	163.9

The increased "pressure to conserve" affected, among other things, the September 1979 resolution of the Council of Ministers, dealing with efficient and economical use of electric energy, heating as well as fuels and gasoline. During the last few months of last year, a mass initiative by the worker and peasant inspectorate checked into the compliance with this resolution. More than 190,000 volunteers were supposed to look for flaws and come up with additional conservation possibilities.

The benefit of this large undertaking, however, has been limited: It was determined, for instance, that producers have a capacity for saving only as much as 1.2 percent in electricity. When considering other energy carriers, the effect of conservation amounted to the equivalent of 1 million tons of raw brown coal, which, however, is less than 0.3 percent of the total primary requirement for the GDR. It is also conspicuous that actual savings are altogether higher than ABI recommendations.

According to NEUES DEUTSCHLAND, the most significant realization of this ABI control is: "We are only at the beginning of efficient and economical energy consumption of the kind contained in the resolution by the Council of Ministers."

The following commentary by the party organ emphasizes the significance of a consistent reduction of still existing practices of energy waste, if future improvements in the standard of living are to be expected:

--"The continuation of our social policy demands a strong growth in productivity. In this connection, it means that the specific energy use must be lowered noticeably to be able to achieve a greater increase in production. Each incident of waste will only reduce our sociopolitical opportunities.

8991
CSO: 2300

GERMAN DEMOCRATIC REPUBLIC

MORE EFFICIENT UTILIZATION OF MACHINERY, EQUIPMENT RECOMMENDED

East Berlin PRESSE-INFORMATIONEN in German No 29, 7 Mar 80 pp 4-5

[Article by Birgit Heinze: "Our View of the Economy: Effective Utilization of Fixed Assets -- A Precept for Good Economic Judgment"]

[Text] Today the fixed assets of our national economy already have a value of more than M 680 billion, in which amount the producing sectors share to an extent of M 450 billion. They are growing from year to year. In the 1970 to 1978 period, this resulted in a 63-percent expansion of the available fixed assets in the industrial sector alone. It may thus be said that we have a modern production technology. Based on their value, almost one-quarter of the fixed assets in the industrial sector are machines and machine-tools and other technological equipment. Energy-related installations are not included in this.

In view of this gratifying development, there arises the question of how well we manage these assets, and what they produce for us. After all, such investments were made for the purpose of obtaining a higher national income, which is the basis for our program of full employment, national welfare, and stability. However, with respect to full utilization of machinery and installations things are progressing at a slower rate. It increased from 12.5 hours per calendar day in 1970 to 14.9 hours last year.

Variable Shift Utilization

Idle machines are a burden for us. They are costly and bring us no profit. However, through more effective utilization of such fixed assets, production increases can be achieved without investments. A high level of utilization of machinery and equipment is attained, particularly in those enterprises in which the preparations for their use and the activation of new technical equipment as well as organization of production are carried out in a timely and comprehensive manner in close cooperation between enterprise management and working perconnel, and in which such utilization is continually and publicly controlled.

There still exist considerable divergences in connection with the utilization of highly-productive fixed assets. This state of affairs has its beginning in variable shift utilization, which is one of the most important reserves available for increasing fixed-asset effectiveness. It is often explained in this connection that there is a lack of sufficient personnel for multishift machine operation. One particular fundamental idea in connection with intensification is that work slots be saved through rationalization and that personnel be freed which then can be employed on a priority basis for bringing about a more complete utilization of highly productive machinery and installations. Approximately 21.2 hours per calendar day could be a technically possible utilization time. There are technical and technological reasons for this. Suffice it here to refer only to such areas as maintenance, servicing, and repair. If we could raise the utilization rate of such fixed assets by a mere 10 minutes per day, it would be possible to achieve thereby a production increase of more than M 3 billion.

We note that today there are already a number of industrial combines and enterprises in the metalworking industry which are utilizing their production equipment at a rate of approximately 15 hours and more per calendar day, which amounts to full utilization in three shifts and partial utilization during weekends. Among these are the VEB Carl Zeiss Jena Combine, the Fritz Heckert Machine-Tool Combine, the Pumps and Compressor Combine, and the Hermsdorf Ceramic Works.

Avoiding Downtime

It is not only a higher rate of shift utilization which leads to a more effective use of fixed assets. Considerable influence is also exerted by an uninterrupted production process. If there is no orderly inflow of materials and if there are bottlenecks in the production process which stop the flow of work, production is held up. Periods of breakdowns and downtime will result. Periods of waiting for repairs and inadequate preventive maintenance also exert their negative influence in this respect. For it is only with dependably operating machines that the technically possible time periods can be utilized fully. Considerable influence is also exerted by such factors as orderliness and safety, and avoidance of breakdowns and damage. The extent to which the scientific-technical and economic performance parameters are attained and the degree of work-time utilization also depend on reliable functioning. Today, the responsibility of each worker for optimum fixed-asset utilization is substantially greater. In the period from 1970 to 1978, the average value of existing fixed assets per industrial worker increased from M 58,600 to M 87,300, i.e. by almost one-half. In the construction industry, in agriculture, and in forestry it even rose to the 1.7 level. Thus there arises at each place of work the question of how well these assets are being managed.

Good specialist qualifications and continual training of the personnel who operate the machines additionally contribute to an effective utilization of these fixed assets. Proper handling of entrusted fixed assets helps to avoid damage, to counteract breakdowns, and to eliminate their consequences more quickly.

In the course of planning consultations, many collectives submitted recommendations for a more effective utilization of their fixed assets. This includes the development and application of standards for optimum utilization of important, highly productive production installations, for rationalization, and for the application of scientific work organization which makes it possible to free manpower which, not in the last instance, is needed for multi-shift utilization of the new technology. Another expression of this are the competitive commitments of many collectives to achieve in 1980 one or several days' production in excess of the plan.

Today is is necessary that the expanded fixed assets be applied far more effectively to raising the national income level, particularly through rationalization.

8272
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STATE SECRETARY INTERVIEWED ON EMPLOYMENT OF RETIREES

Budapest MAGYAR HIRLAP in Hungarian 2 Mar 80 p 5

[Interview with Dr Albert Racz, state secretary of the Ministry of Labor, by Jozsef Fahidy: "About Employing Retirees"]

[Text] Dr Albert Racz was born in 1928. He completed [studies] at Karoly Marx University of Economics in 1952, specializing in industry. After completing his university studies, he joined the Department of Statistics as Assistant Professor. From 1958 on, he worked at the Central Statistical Office as head of the Department of Economics. He has been state secretary of the Ministry of Labor since November 1978. He is a member of the Statistical Committee of the Hungarian Academy of Sciences. He is a tenured university professor and the author of numerous studies.

[Question] The regulations concerning the employment of retirees recently have been partially readjusted. According to the latest data, there are over 2 million retirees in the country. There are many workplaces where their experience, knowledge and labor will be needed in the future, too. At the same time, there are institutions and workplaces where requirements can also be met without the employment of retirees. On the other hand, it has become customary for employers to employ former workers after their retirement--whether they were needed or not.

The subject is of equal interest to the employer and the employed retiree. Our correspondent Jozsef Fahidy spoke to Dr Albert Racz, state secretary of the Ministry of Labor.

[Answer] The supplementary regulation of the employment of retirees is part of the measures that are meant to promote rational manpower management. This is what the government considered when it laid down the methods and extent of the economic regulation including wage regulation. The assets of knowledge and experience which the older age-groups have are extremely important to our society. Our task is to suitably utilize these "national assets" in the interest of our economic progress. This is also in harmony with the desire and interests of the retirees still willing to work.

About 400,000 retirees annually accept work, and the vast majority of them work part time. Among them, more than 330,000 are workers and employees, respectively, and some 50,000 are agricutlural producer's cooperative workers. Three-fourths of them perform physical labor and the remander, white collar work. In 1978, retirees on the average worked 1,020 hours, that is 5.2 months. Their total performance was equal to the entire annual labor of nearly 170,000 active wage earners. The most active are the 60 to 69 year olds, who make up 50 percent of the working retirees, but the ratio of those over 70 also exceeds 20 percent. Thirty percent of the retirees perform a useful activity in industry, about 15 percent in agricutlure, and more than 30 percent in commerce, or various services and in the field of public health.

Beyond the employment of retirees, the incentive pension bonus system also helps the economic activity of older people. In past years, though, this system has lost some of its popularity. But even today, the number of those, exclusive of agricultural workers, who continue to work in the various branches of the national economy after earning their right to a pension is estimated at 50,000 to 60,000. In our judgment, the economic activity of older people is satisfactory and is in harmony with our present employment policy objectives. Thus we do not plan more comprehensive measures in this field.

[Question] Nevertheless, what made it necessary to modify the regulation in force until now, and what is the essence of this modification?

[Answer] In every sector of life, we must adjust to the societal and economic policy requirements of a given period. The undesirable distortions of the effective and useful employment also made the modifications necessary.

Those who perform physical labor will also be very much needed in the future. According to the needs, one can even increase their number. The activity of retirees performing non-physical work is also needed when they satisfy real needs. In accordance with the regulation applying to the work force management of the nonproductive sectors, however, the latter's employment must be reduced compared to the past years. The possibilities for employment and income earning should have rational limits. Within the confines provided by these limits, the income must always be in harmony with the performance and the work performed. The employer or the supervisory authority should determine the necessity of employing retirees.

[Question] Up to now, we have been informed about social and economic relations and about the regulation. But let us turn to the changes of substance. What are they and whom do they affect?

[Answer] They do not affect the vast majority of retirees. The directive remains unchanged according to which a retiree employed in a work and cooperative membership relationship or as auxiliary worker may in the course of a calendar year work 840 hours, and in some activities 1,260 hours with his pension remaining untouched. In the future, too, the person whose--monthly pension does not reach this year 1,720 forints and accepting physical work may work without any restrictions, as well as the person who is employed in specifically determined activities (porter, stoker, night watchman, etc.); in addition, the blind belong to this category. In justified cases, in the future the employer may also request the broadening of the annual employment limit. The National Council of Trade Unions [SZOT] decides about this authorization in agreement with the Minister of Labor. The request may apply not only to individuals but to groups as well.

A change is that the modified legislation limits the earning opportunities of retirees performing non-physical labor. In substance, the pension must be paid to the person performing non-physical work in a labor relationship (as a cooperative member) as long as his income during the calendar year does not reach 30,000 forints. But the amount of the pension and the income due for the work performed may not jointly exceed 10,000 forints per month. If the pension and the wages reach the limits mentioned, the person involved may no longer be employed without a special permit even within the 840-hour limit. Outside of a labor relationship, on the basis of the so-called other legal relations (contract), retirees may continue to work for 12,000 forints a year without any reduction of their pension. In non-physical activities, this is to be applied in such a way that the joint amount of the pension and earnings does not exceed 10,000 forints per month. The person whose pension this year does not exceed 1,720 forints per month may earn 30,000 forints a year in a non-physical activity without any restriction.

[Question] Will it be possible in the future, too, to employ a person whose contribution and labor are indispensable, namely, to give him more money for greater and more valuable work without hurting his pension?

[Answer] In the case of every regulation, one must reckon with exception to occur in practice. This is also the case now. We do not want to limit necessary and effective employment with this decree. Thus in justified cases, exemptions may be requested and obtained. Exceptions to prescribed amount limits for the calendar year may be authorized by the responsible minister, the head of the national organ of jurisdiction under the direct supervision of the Council of Ministers, and the national leadership of social organizations. A very narrow segment of our society is automatically exempted from the limitation. The most eminent representatives of our intellectual and artistic life, the regular and corresponding members of the Hungarian Academy of Sciences as well as state and Kossuth-prize winners, belong to this category.

[Question] Many people are asking what kind of restriction the 12,000 forint limit represents?

[Answer] In a legal contract relationship, the earning limit in addition to the pension is 12,000 forints. This applies to a case when someone contracted to perform a task that can be planned in advance and does not require him to perform regular, month-to-month work. This is a possibility that may occur on one or two occasions in a given year. If the value and profit of the work performed on a contract basis is worth more than 12,000 forints to the employer, he may then request the head of the supervisory authority for an exemption to the income limit. If, on the other hand, the work is not contracted for one or two occasions but involves continuous employment, a work relationship must then be established, in which case the applicable income limits are valid. Whether the employer has the possibility to remunerate the services in this or the other form is another question. If he does not have the possibility, he should tell the employee to decide whether the latter continues to accept the contract with the given conditions, or whether he wants to look for other employment.

[Question] Thus in the future, the organ employing retirees will have a stronger decision-making obligation and also a greater responsibility. What will the requirements vis-a-vis the employer be?

[Answer] They should know exactly the legislation regularing the work of retirees and act according to the regulations. Managers should pay attention to the necessity, usefulness and effectiveness of employment because their responsibility in this area is indeed greater than in the past. One cannot refer only to decrees and regulations since managers make the decisions. The limits of the decree may be lifted if the necessity for the work can be justified. In such a case, the task to be carried out, the skills of the person considered for employment, his pension and income possibilities must be stated.

This decree directly affects a smaller part of the retirees working in non-physical activities or intending to accept such work. Namely, the question arises whether the employer, on the basis of the rules of strict cost management, is able to employ the former worker. The form of employment may change--contract instead of work relationship or vice versa--but the employer may change, too. It may happen that the retiree must give up his present place of work and find a place where his work is in demand. This may cause worries to individuals and the temporary loss of the income they were accustomed to. It will, however, help the labor force that can be activated to work more usefully for the national economy, so that the employment of retirees in workplaces will not be handled as social policy task.

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EXPERIENCES IN TECHNOLOGY TRANSFER HIGHLIGHTED

Budapest KULGAZDASAG in Hungarian No 3, 1980 pp 3-17

[Article by Marton Tardos, candidate, main department head at the Business Cycle and Market Research Institute: "Transfer of Technological Information from Highly Industrialized Countries"]

[Excerpts] One of the most important aspects of development policy is the efficient purchase of advanced technology. Economic isolation leads to a slowdown of development. Therefore, it is clearly in the national interest to obtain advanced knowledge from highly industrialized countries. But using new technology in an efficient manner is not a simple task. In spite of many positive changes, the Hungarian economic management system of the 70's was unable to achieve a qualitative improvement in the utilization of investment resources. The problem can be solved by improving central direction to provide favorable conditions for strengthened independence and enterpreneurial spirit. Another difficulty which cannot be solved in the short run is related to the rigid system of bilateral relations between Hungary and CEMA countries. As a result, the large and stable CEMA market often does not facilitate the use of new technologies imported from the West. Countries with a medium level of development often expect to resolve domestic economic and social tensions through the release of auxiliary resources. One of these sources of development to be mobilized may be the transfer of highly developed technologies from neighboring, highly developed countries.[1] East-West trade can play an important role in widespread use of advanced technological knowledge and the spreading of technological and economic information necessary for the adoption of new methods.

The present study is aimed at an analysis and presentation of Hungarian experience related to the utilization of this economic opportunity. We are looking for an answer to three questions:

--what are the economic policy strategies in which the import of technology can play a major role and what is the expected effect of these strategy goals on the fruitfulness of technology transfer;

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[1] Cf. A. Gerschenkorn: ECONOMIC BACKWARDNESS IN HISTORICAL PERSPECTIVE, Cambridge, Harvard Univ. Press, 1962.

--what are the social, economic and political factors which present an obstacle to the mobilization of resources inherent in technology transfer;

--the extent to which the presently existing system of world trade provides a basis for technology transfer founded on mutual advantages.

In the course of our analysis we shall not give a precise definition of the term "technology transfer." What we mean is the import of machinery and technological equipment together with the purchase of manufacturing know-how. We are aware of the distinction in the literature dealing with this topic between vertical and horizontal technology transfer. The former means the transfer of information between the stages of applied research, development and manufacturing organization; the latter refers to a simple transfer of information between institutions at a given point in the production cycle (e.g., when a company possessing the information establishes a factory or plant for the other company). International transfer of information is regarded as a special case of these two kinds of technological transfer.[2]

Some international transfer of technological information takes place outside of the realm of legal or economic acts. This category includes the use of scientific and technical publications as well as the use of generally available scientific and technical information in the course of developing independent production processes. There are many forms of information transfer within the framework of legal or economic acts: purchase of technological machinery, licences, technological processes as well as the construction of turnkey factories. Since we do not intend to investigate the differences between the effects of using these channels, we will simplify our task by dealing with the entire range of relations.

This study is based on an analysis of statistics dealing with the development of the Hungarian economy together with case stories produced by the Economics Institute of MTA [Hungarian Academy of Sciences] and the Business Cycle and Market Research Institute describing the economic development experiences of Hungarian industrial enterprises....[3]

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[2] About this see: Mansfield, E.: International Technology Transfer: Forms, Resources and Policies, AMERICAN ECONOMIC REVIEW, May 1975 pp

[3] Of our cited cases, several are contained in one of the manuscripts about to be published by Economic and Legals Book Publishers entitled: "Enterprises Behavior"--Enterprise Environment (Studies from the Enterprise Management Sphere)" which include the following: Karoly Attila Soos: Investment decisions within the framework of a state development program: Technology level and Efficiency-Tamas Bauer, Attila S. Soos: Within the Web of Necessity. Eva Tarnok, Peter Vince: Planned Uncertainty. Eva Tarnok: The Limits of Independent Technological Development: Karoly Fazekas: Intensive Product Change and Expansion.

...The results of a development strategy oriented toward CEMA markets and based on the accomplishments of Western technology were substantially below planned levels. Losses resulting from weaknesses in the forecasting ability of planners showed up primarily in the contradiction between the demand for a wide selection of products and the narrow range of supplies and also in the unfavorable trend in our capitalist trade balance.

The only reason why this development strategy caused no major difficulties aside from transitional domestic supply bottlenecks is the fact that increased exports of raw and processed foodstuffs and raw materials were still sufficient to pay for Western import demand growing at a rate higher than planned.

Innovative Policies During the Years of the New Economic Mechanism

The Hungarian economic leadership attempted to formulate a new technological development strategy and new economic methods to counter domestic dissatisfaction caused by product shortages that interfered with smooth management and slowed down economic progress; in addition, it seemed that there would be a sudden reduction in the opportunities for exports to the West outside of the processing industry.

The primary goals of the new economic mechanism included an end to the dominant position of sellers in the market and the ability to use processing industry capacities developed earlier for increasing capitalist exports in an efficient manner.

Some weaknesses of earlier technological development practices were stated clearly with a view toward this dual goal:

1. They found that the complexity and constant variation of economic conditions make it impossible to provide successful central direction of production and marketing in a broad segment of the economy, primarily in the processing industry, agriculture, certain types of services and the domestic and foreign trade of industrial and agricultural products. They decided to decentralize decisionmaking authority but they never renounced planned state direction of development to be accomplished through credit allocation and state budget payments.

2. They recognized that enterprises are unable to formulate their views regarding development and marketing questions unless they have unified criteria to evaluate the various elements of their income and expenses. They intended to avoid the resulting consequences in cost calculations and the price system through a unified accounting of resources and the introduction of currency exchange rates.

3. They recognized the undesirability of providing preferences for the use of technological and structural knowledge developed domestically by using administrative methods. They saw that the practice of machinery, equipment, licence and know-how purchases that developed in an almost spontaneous manner during the mid-1960's could turn into a substantial development resource

in the future. Thus, they planned for the efficient application of such purchases. They stated that enterprises which had the money to buy parts, licences, machinery and equipment could decide freely whether they wanted to buy domestically, for forints, or for convertible currency.

The decisions made on the basis of these insights seemed to open the door to efficient application of Western technology. They thought that currency exchange rates and other financial levers set by central authorities would give a good indication to profit-minded enterprises with regard to decisions involving their own resources and development questions, based on rate-of-return criteria, and also with regard to the correct combination of technology obtainable in the domestic market and opportunities offered by CEMA partners and Western markets.[6]

Based on such considerations certain measures were taken to create a framework for cooperation with firms of leading industrial countries. Administrative expenses related to licence purchases were reduced. Cooperative relationships were regulated by special measures. The scope of progress in this area becomes clear when we realize that before 1960 Hungary purchased essentially no licences; between 1960 and 1965 licence purchases were limited to 4 or 5 cases a year; but just in 1975, 40 licences were bought. Licence purchase costs grew to 7.5 percent of technological development costs in 1975. Nevertheless, this percentage is still under the level justified by international comparisons. Studies show that in developed capitalist countries comparable in size to Hungary this rate fluctuates between 15 and 45 percent; in rapidly developing countries such as Spain and Greece, the rate even reaches to double the total spending on technological development.[7]

Growth is even faster in the area of cooperative relationships. By the end of 1977, 550 agreements were recorded nationwide, 345 among them still valid at the time. Most of the agreements were signed by machine industry enterprises but other sectors are also employing this type of economic cooperation.

In addition to licence purchases and cooperation agreements, the establishment of joint enterprises has been possible in Hungary beginning from 1972, provided that the Hungarian share of ownership is at least 51 percent. Progress in this area has been slight following the adoption of the law on joint enterprises. Only three agreements were signed: they can make a significant contribution to the transfer of technological information, but thus far these relations could not bear fruit.

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[6] These statements apply mainly to the category of so-called 'enterprise investments' which account for more than one-half of all, investments. Similar criteria may be used in decisions regarding the use of resources for state investments under central authorities, although in these cases the profit motive does not play a role.

[7] Cf. Peter Kardos: "Licence Purchase or Domestic Development: KULGAZDASAG No 8, 1978.

Table 1

Cooperation Agreements in Effect at the End of 1977

	Number	Proportion (in percents, based on value of agreements)
Machine Industry	250	67.4
Agriculture	21	20.4
Light Industry	47	8.2
Chemical Industry	21	3.9
Construction Materials Industry	6	0.1
Total	345	100.0

Source: Vera Vari: Establishment of joint enterprises, Business Cycle and Market Research Institute, 1979

Licence purchases, the development of cooperative relations, the opportunities for establishing joint enterprises in Hungary, coupled with major changes in the system of economic direction, paved the way for rapid progress in East-West relations and, in particular, to the very promising transfer of technological experience. Besides improved domestic product supplies and increased socialist exports, the success of this process is also demonstrated by the accelerated growth of processing industry exports to non-socialist markets. In spite of increasingly difficult market conditions, the share of Hungarian machine industry and chemical industry exports in world trade has increased. It is probable that these results would have been even better had the government not insisted on the principle of equality, i.e., by not slowing the development of successful enterprises, providing less support to weak enterprises, offering more incentives for obtaining the means necessary for the purchase of advanced technology and ensuring that domestic demand is more effective in slowing down socialist exports.

All of this probably would still have been insufficient to protect the country from the shocks of 1973 and the years that followed. Nevertheless, we can state that the transfer of technology was not the reason behind the tensions in our foreign trade; on the contrary, it has been a moderating factor.

On the Western side, there are two reasons behind their complaints: on the one hand, the expansion of their Eastern markets remains below desired levels and on the other, increased trade presents difficulties for their corporations which they either cannot handle or are unwilling to face. Their difficulties are due to the fact that they are able to engage in orderly business relationships with their Hungarian partners only if they provide help, through cooperation or other forms, in the marketing of Hungarian industrial products.

Further difficulties arise from the inability of Hungarian enterprises in many cases to promptly and reliably utilize the marketing opportunities that arise.

The present study is concerned only with the first problem, i.e., the reasons behind domestic deficiencies related to the transfer of Western technology. With regard to the reasons for the lessened interest of Western corporations in East-West trade we will confine ourselves to making this point: at the end of the 50's and the beginning of the 60's, in a period of rapid growth of the European economy, Western firms accepted these difficulties in part because they were looking for markets and in part because they hoped for a reduction in their labor shortages. At the present stage, in a period of slower growth, better utilization of their capacities is dominant among their economic considerations relating to cooperation. Cooperation with CEMA countries based on connected sales and purchases is no longer entirely satisfactory from this standpoint. Another obstacle to the presence of Western firms in smaller CEMA countries is the fact that their possible successes are restricted to the small markets of a single country and will not lead to the spreading of their products throughout the entire CEMA trade as a result of the bilateral ties between CEMA countries.

Difficulties in Application of New Technologies

Below I will survey the domestic difficulties of technology transfer, based chiefly on the case study mentioned. I shall distinguish between three groups of difficulties:

1. The first group is related to the characteristic features of the institutions and regulations of the Hungarian economy. As we mentioned before, at the time of the introduction of the new economic mechanism a casual observer might have concluded that a system of institutions and regulations suitable for decentralized development decisionmaking has been created in Hungary. The more than 10 years of the existence of the system provided convincing proof that it led to a substantial improvement in the adaptability of day-to-day management; however, the system was unable to raise the efficiency of investments to any significant extent.

One of the most urgent unsolved problems of the economy is the sluggishness with which it reacts to the emergence of new demands and reductions in existing requirements. For example, up until now no way has been found to satisfy a demand for a new product by establishing a new enterprise. This deficiency is complemented by another phenomenon: when demand for a product made by an enterprise declines or ceases altogether, then economic inertia leads to continued production with state support until a cabinet level resolution is made, instead of a halt to production and liquidation of the enterprise.

Another factor interfering with the emergance of a production structure suited for existing demand is the need for enterprises to use three incompatible systems of criteria in their investment decisions. 1. In principle, an enterprise must make decisions on investment opportunities with the income of its workers in mind. 2. The National Bank, which receives the enterprise's credit application, uses return-on-investment criteria when issuing loans. 3. Central planning authorities and supervisory branch ministries use their own, non-compulsory, natural production guidelines as the basis of development decisions. Typically, the conflict between these three sets of goals is resolved by a compromise, after which none of the parties feels it is directly responsible for the success of the investment project agreed upon. Right at the start, enterprises acted in ways inconsistent with the concepts of the reform. It is well-known that under the existing system of taxation enterprises intending to use their net profits for investment purposes cannot do so in the hope that they will be able to improve the average wage level of their workers as a result of their development projects. Nevertheless, the general observation is that enterprises are ignoring the normative system of regulations by investing not only their own development resources but also standing in line at the National Bank to receive additional loans. In general, enterprises formulate their development ideas in conjunction with the guidelines laid down by central planners and supervising ministries. In most cases they can do this even if the expected cost of the investment exceeds their own resources and their ability to make loan repayments. This is because in such cases enterprises can assume that the financial resources necessary for continued operations will be supplied by central authorities either through tax relief or through financial support. Naturally, the loosening of financial barriers in investment decisions led to a lack of an automatic system to enforce efficiency requirements relative to machinery imports, licence and know-how purchases or the building of cooperative relationships with highly industrialized capitalist countries. The loose monetary regulation of investment activities necessitated bureaucratic interference, which in turn reduced the efficiency of technology transfer.

The consequences of administrative methods show up not only in the elmination of less important development projects which are ignored in the plan but also in the effect they have on the development program based on Western technology carried out within the framework of the autobus project. The Csepel Car Factory needed a new process for bus chassis production. Due to the quantitative criteria imposed by the branch ministry, the technology chosen was the one supplied by Oerlikon, a Swedish firm, which is economic only with large production runs. As a result, the factory is having great difficulties in making bus chassis for the much smaller volume of sales to capitalist markets.[8]

The lack of efficiency criteria in the purchase of know-how is demonstrated by one of the most important economic programs of the 1970's. American production systems were implemented on a large scale in crop production. This program necessitated imports of American agricultural machinery and pesticides. The cost in currency was repaid by agricultural enterprises through grain exports. Only after the implementation of this program did it become clear that enterprises would have been unable to repay incurred costs without special state support. This is what led to the squeeze on non-socialist machinery imports of the agricultural sector after 1975.

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[8] Cf the case study by Attila Karoly Soos.

Another typical situation characteristic of the contradictions in the use of capitalist imports for investment is the series of actions organized between 1976 and 1980 in the interest of the development of so-called "products saleable in all markets." This led to a rapid increase in the demand for machinery from capitalist markets in 1977 and 1978. The 5 year plan assigned 45 billion forints for this purpose: this represents about 13 percent of projected industrial investments. The conditions for capitalist machinery purchases were made easier for installations financed out of this fund. In the granting of credits they insisted not only on general requirements regarding rate of return but also on repayment of loans by enterprises out of the proceeds of increased capitalist exports. As a result, credit applicants included chiefly those large enterprises which expected capitalist exports to provide the necessary currency receipts.

Thus, the development program associated with the 45 billion dollar loan facility could not have led to a desired increase in capitalist exports even if all of the recipient enterprises had fulfilled their obligations. There are frequent delays and partial lags in fulfilling these promises.

Table 2

Investments of the Socialist Sector (in millions of forints)

Időszak	Összesen	Belföldi gép	Szocialista	Nem szocialista
(1)	(2)	(3)	(4) import gép	(5)
1970	91 909	18 012	11 083	7 647
1971	102 466	19 531	13 195	9 675
1972	106 363	19 629	11 662	11 730
1973	111 616	21 552	13 343	11 405
1974	124 156	24 853	16 205	13 332
1975	146 552	28 738	22 233	14 420
1976	152 089	30 329	22 416	16 448
1977	181 493	33 694	26 283	21 795

Key:

(1) Period
(2) Total
(3) Domestic machinery
(4) Machinery from socialist imports
(5) Machinery from non-socialist imports

Source: Annual Statistical Abstract 1978, p 108

II. The low efficiency of the methods used for influencing investment activity through monetary and administrative means is not the only obstacle to basing technology transfer on efficiency criteria. Other contributing factors included the difficulty arising from our peculiar position in the international division of labor. It is difficult to use both the advantages from planned cooperation with CEMA countries and the division of labor existing in the capitalist world market in a parallel manner. The Hungarian system of economic direction intended to facilitate operations with the different currencies used in these two markets by the use of exchange rates. According to established principles, centrally determined exchange rates were set in accordance with average export production costs. The exchange rates actually introduced were insufficient to cover even this cost level. Economic experience points to two problems in this connection. One interfered primarily with the sensible determination of the level of technology transfer and capitalist exports. As a result of exchange rates set at levels below the average cost of export production, the state was forced, from time to time, to use export subsidies and limitations on import demand by public and private customers to achieve a better trade balance. These methods were insufficient, even before 1972, to achieve trade balance with non-socialist countries. This was followed by the price explosion between 1973 and 1975 resulting in the deterioration of our terms of trade. As a consequence, exports were even less capable of paying for imports than before. This method for setting exchange rates does not supply sufficient orientation for decisionmaking on the part of managers. This statement is justified even if we have some doubt about whether a possible devaluation of the forint might lead automatically to balanced trade, i.e., an increase both in exports and the production of import substitutes.

The other problem is related to the fact that successful application of Western technological imports can become truly effective only if the results enable us not just to improve domestic supplies and increase capitalist exports but are also suitable for use in economic relations with CEMA countries. However, opportunities for doing this are limited by the peculiar norms of relations among CEMA countries which differ from Western customs. These difficulties are caused by the bilateral character of trade relations within CEMA and the method used to set contract prices in CEMA trade. The lack of convertible currency accounting and bargaining on the basis of supply and demand in relations among CEMA countries leads to a situation where, quite frequently, the sale of products developed on the basis of Western licences or made on machines imported from capitalist markets using Western know-how is not profitable and, therefore, does not contribute to the repayment of the cost of licences, know-how or machinery purchases.[9] Another obstacle is the unexpected competition, with no base in terms of long-range economic factors, appearing when a CEMA partner country sets up to manufacture and export a product under licence, one that was in the past successfully made in Hungary and sold economically both at home and in capitalist markets.

The obstacles in the way of CEMA exports are well illustrated by the example of the production, based on West German technical advice, of rear axles for buses and trucks at the RABA factory in Gyor or the manufacturing of hydraulic gearboxes in the Csepel Car Factory. These products are successful in their use of Western production and engineering expertise. Nevertheless, making a product satisfying existing requirements was still insufficient to ensure that it is efficiently marketable under the obligatory norms of the CEMA price system.[10] CEMA contract prices are obtained by converting world market prices into CEMA contract prices denominated in transferable rubles by using an ad hoc, artificial exchange rate and ignoring the social effort represented by capitalist purchases required for exports.

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[9] The difficulties arising in connection with the use of the results of transferred Western technology in trade within CEMA are a powerful factor limiting the willingness of Western corporations to deal with small CEMA countries, as we mentioned above.

A long list of examples may be given where, due to the lack of modern, specialized component and semi-finished goods production and insufficient supplies from CEMA partners, a machine industry enterprise attempting to export up-to-date products must use capitalist import components. This, however, cannot be done because the resulting product will not be profitably marketable in CEMA markets. If, on the other hand, the enterprise does not obtain the component in question from capitalist imports, they will either endanger product quality because of the obsolete domestically produced component or production development opportunities will be missed.

Technological machinery imported from CEMA countries and, in particular, from the Soviet Union represents only a small fraction of Hungarian machinery imports;[11] nevertheless, these machinery imports cause a great deal of uncertainity relative to the success of Western technology imports. The example of the turbine made by the Lang Machine Factory under a Swiss BBC licence is instructive in this regard. This is a successfully completed development project which resulted in efficient substitution of a high quality product for capitalist imports, for a number of years. However, a Soviet purchase opportunity caused constant uncertainty with regard to the production of 200 MW turbines. The Soviet unit competing against domestic production differed from the Hungarian product in three respects: 1) its technical parameters were inferior (it was difficult to warm up due to its larger weight; therefore, both startup and shutdown were more expensive than in the case of the unit made by the Lang Machiner Factory); 2) the Soviet supplier provided less installation support and spare part supplies than the Lang Machine Factory; and finally, 3) it was cheaper than the Hungarian unit.

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10. The details may be found in the studies (quoted above) by Tamas Bauer and Attila K. Soos as well as Eva Tarnok and Peter Vince. (The articles by Tamas Bauer and Attila K. Soos were based on their joint study and were published in the September and October issues of KULGAZDASAG.)

11. Cf. Ivan Schweitzer: "Machinery Imports from the USSR" GAZDASAG, No 2, 1977 p 80-96

12. The details may be found in the case study by Eva Tarnok, partially published in the January 1980 issue of KULGAZDASAG. (Eva Tarnok: "Case Study of the Importance of Licencing Relationships").

In the final count, the overemphasis on lower price (unusual in this type of machinery) resulted in continuing uncertainty in the long drawn-out decision process affecting the future of an advanced, high technology industry with great promise.

The phenomena observed in CEMA export and import trade have a common explanation. There exists a conflict between the price setting methods used in trade within CEMA on the one hand and the national evaluation of the accouting currency used in bilateral relations (the transferable ruble), on the other. It is generally known that contract prices used in trade among CEMA countries are set on the basis of the average world market price of the 5 years preceding the transaction, calculated at official exchange rates.

The rigidity of bilateral trade makes it impossible for us to use technological imports from capitalist countries in the large and apparently secure markets of the CEMA. Although the commerical exchange rates or price multipliers, different from official dollar/ruble exchange rates, make it possible to discuss the problem in a more rational framework, they are still insufficient to eliminate the obstacles to trade resulting from the basic rigidity of this system of relations.

The difference between the two exchange rates is no accident: it is a consequence of the fact that the transferable ruble is a non-convertible currency. This means that countries with claims in transferable rubles are not free to use them freely, as they would be with claims denominated in convertible currency; they can buy only the goods offered by their trade partner. Therefore, the usefulness of transferable rubles is below that of convertible currencies. This difference is reflected in the difference between official exchange rates and commercial exchange rates or price multipliers; this is also reflected in the export costs of one unit of free currency vs one transferable ruble.[13]

Even without a thorough analysis of the reasons behind this phenomenon it is clear that we face a peculiar kind of contradiction arising as a result of the rigid price setting methods used in bilateral trade. If a CEMA country is able, through technology transfer or by other means, to produce goods whose quality is up to the standards of leading Western industrial countries, and therefore able to increase sales and obtain the full market price for the product, then, under the existing conditions, selling such products in the CEMA market is unprofitable. The situation is similar with regard to products which require a great deal of free currency imports. As a

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13. One of the possible interpretations of this problem may be found in F. Holzmann: FOREIGN TRADE UNDER CENTRAL PLANNING, Harvard Univ. Press, 1974, especially in Part 4, Chapters 11 and 12 entitled "Soviet Foreign Trade Pricing and Discrimination;" "More on Soviet Bloc Trade Discrimination." In the Hungarian literature the topic is surveyed by Imre Vincze: THE CEMA INTERNATIONAL CURRENCY SYSTEM, Economics and Law Publishing House, 1978 as well as Katalin Botos: FINANCIAL AFFAIRS IN CEMA," Economics and Law Publishing House, 1978.

result, enterprises frequently refuse to sell such products to CEMA countries. If, on the other hand, a country is still willing, under these conditions, to market high quality products in the CEMA market then it will create a dumping-like competition in the partner country without a true basis in foreign trade.

In exceptional cases the bilateral practice of trade as it exists at present is not an obstructing factor. A precondition for such a possibility is that the production of high quality goods require very little or no convertible currency costs. In this sense, MEDICOR carried out a successful product development program by designing medium-range X-ray equipment suitable for both Western and CEMA requirements, essentially by building on domestic engineering know-how.[14]

III. The third group of factors forming an obstacle to technology transfer is, to some extent, a consequence of the uncertain situation of enterprises, the related unsolved problems of the domestic investment framework and the strong ties between our economy and the rigid bilateral trade within CEMA. The large number of limiting factors prevented a widespread emergence of enterpreneurial activity in Hungary after the 1968 economic reform.

The most important consequence of this fact is the static outlook of decisionmakers within enterprises. They analyze their problems during the formulation of their 5 year or reconstruction plans but they are unable to adapt dynamically by continuously analyzing conditions as they change on a daily basis. This unfavorable state of affairs is caused by a number of factors. Due to inconsistencies in the monetarization of the economy it is not clear what is the exact relationship between increased capital strength of enterprises and natural engineering aspects in economic strategy. Efforts toward increased enterprise profits were hampered by the natural engineering orientation of supervisory authorities and by the experience which shows that financial resources needed for the implementation of plans based on natural technical considerations can always be obtained through budget subsidies.

Enterprise management is having a hard time trying to sort out the constant contradictions between changing conditions and strategic goals based on natural technical considerations. As a result, enterprises are not sufficiently sensitive to changes in conditions. Even after 1968, there was no change in the practice of having large research and development units run apart from the enterprises themselves. Research and development specialists are not sufficiently identified with the goals of the enterprise because of the organizational independence of development units. The frequent administrative wall placed between production and development departments also contributes to a further bureaucratization of their relationship. As a result, development strategies formulated for the enterprises by scientific, design and engineering institutes are often behind changing conditions and fail to react to new demands and opportunities in a timely manner.

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[14] Cf. Robert Becsky: CASE STUDIES ON THE RELATIONSHIP BETWEEN ENTERPRISE EXPORT STRUCTURE AND MARKET DEMAND, Business Cycle and Market Research Institute.

The lack of a development organization within the enterprise explains why, after the rapid increase of Western European sales of refrigerators developed cooperatively by Bosch GmbH and the Jaszbereny Refrigerator Factory, the future outlook is not favorable because of the lack of change in construction or models.[15]

Similar problems can be seen in bus production involving the MAN engines. It was noticed too late that the question, believed to have been solved, has not been elimiated once and for all. The new buses required new engines and it would have been better if the manufacturing of new engines had been started up gradually instead of a radical reorganization of existing production and the purchase of a new licence.

The lack of enterpreneurial spirit can also be seen in cases when Hungarian enterprises are unable to buy suitable simi-finished goods needed in their finished goods production: they will not look for cooperative partners because they don't trust their shipments. Instead, they try to absorb the potential cooperative partner into their own enterprise through state resolutions. Once inside the enterprise, they are more or less able to impose their wishes by decree. From its own standpoint, the RABA factory in Gyor, often mentioned above, has progressed successfully. Within the framework of the road vehicle program this enterprise absorbed almost all casting and component manufacturing enterprises of the North Dunantul, plus those that could be converted to such production.[16] At the same time, the increased production of the RABA factory involved substantial and heretofore ignored costs in that the demand supplied in the past by the absorbed enterprises was now left largely unfulfilled. The Machine Tool Industry Works behaved less aggressively. As a consequence, the lack of enterpreneurial ability of its suppliers combined with its own impotence prevented the successful exploitation of a cooperative agreement which, from a technical standpoint, was most successful: the production of microprocessor-controlled lathes. Due to lack of capacity and especially shortages of castings they are unable to satisfy intensive Western demand.[17]

The Future of Technology Transfer

Based on the above discussion it is necessary to concentrate attention on two important unsolved problems.

The first is the high cost associated with the purchase of technological knowledge from leading industrial countries. Paying these costs is especially difficult now that the expected higher cost of licence and know-how purchases and the demand for machinery and equipment representing leading-edge technology cannot be paid for out of receipts of domestic mining and agricultural

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15. Cf. the study by Vera Vari quoted above.

16. The details may be found in the study by Karoly Fazekas.

17. Cf, the study by Vera Vari.

production or products made by reprocessing raw materials purchased from CEMA countries. Thus, the prerequisite and determining factor of the rate of growth of technology transfer is the extent to which it is able to generate development leading to increased capitalist export potential in Hungary.

The other important unsolved question is that even a Hungarian economic system striving for efficient transfer of technology from leading industrial countries was not able to create satisfactory conditions for using existing opportunities.

The hard-to-find costs of technology transfer and dissatisfaction with the effectiveness of such transfer might cause one to doubt whether it is sensible to engage in East-West trade and, in particular, in the transfer of technology. It is not too difficult, however, to demonstrate the drawbacks of isolation. Using the opportunities offered by the world market to buy minerals, machines and technology is not only necessary and useful but also represents a prerequisite for the progress of the Hungarian economy as well as the progress of other CEMA countries.[18]

The realistic question is not whether individual CEMA countries can isolate themselves from the outside world or even whether CEMA as a whole could set up a system based on autarky. The two real, closely related, questions are these: what should be the extent of the relationship between the world market and CEMA countries and what should be the form of this relationship.

One argument starts by recognizing that the processing industry of CEMA countries was unable to achieve any spectacular success in the capitalist world market; this was coupled with a substantial deterioration of the terms of trade for Hungary and other small CEMA countries as a result of the price explosion of 1973-1975. This argument does not lead to the conclusion that the economy must adapt better to world market currents in order to hold its own under more difficult conditions; instead, the conclusion is that the world market puts no value on the knowledge accumulated in the country and it undervalues the output of CEMA countries, in particular, the output of Hungary. The continuation of this argument does not quite imply that CEMA countries should give up capitalist imports of raw materials needed for their development or the purchasing of equipment serving technological progress; it merely finds it unnecessary to build more organic relations between the two market systems and desires to reduce the ties existing between individual member countries and the capitalist world market.[19]

This economic policy implies a conscious concentration of economic resources on the development of major closed systems whose market would be created primarily by division of labor within CEMA. It operates within a realistic framework in that it demands no substantial changes in the regulatory and institutional system of the domestic economy; moreover, it poses no formal obstacles to cooperation with other CEMA countries.

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18. Andras Koves: "World Economic Integration and the Direction of Economic Development," GAZDASAG, Dec 1977 pp 50 -68.

19. Ferenc Kozma: WHAT ARE THE CAPABILITIES OF THE HUNGARIAN ECONOMY? Kossuth Publ., 1978

There are, on the other hand, three aspects of this strategy which imply very substantial social conflicts. 1) In order to successfully implement it, there must be a sudden and thorough change in cooperation within CEMA; this has not occurred thus far in spite of the often-heralded programs. 2) This kind of development could lead to a temporary reduction of the supply of consumer goods, industrial raw materials and semi-finished products which would cause a great deal of dissatisfaction. 3) There is little likelihood of successful investment projects aimed at capitalist exports with a rapid return on investment to be patterned upon CEMA-oriented development projects.

The alternative economic strategy is centered on evolutionary economic development. It recognizes that it is not possible to quickly transform the productive apparatus of the nation by revolutionary means.

This is why it is necessary to concentrate attention on the efficient use of existing resources. Increased savings of energy, imports, labor and investment resources can be coupled with increased efficiency only if they are not the result of pressures from shortages, purchasing limitations and administrative prohibitions but follow from a desire to achieve sensible production growth.

Production cannot be adapted to economic conditions just on the basis of stricter economic conditions for enterprises and the frequently proclaimed increase in enterprise responsibility; this requires a real broadening of decisionmaking authority of the enterprise and the creation of enterprise independence. Thus, success will depend on whether the promises of the modifications of the regulatory system scheduled for 1980 will be fulfilled; i.e., a qualitative strengthening of normative aspects, the reduction of the practice of special modifications of regulators for individual enterprises; whether it will be possible to arrive at a situation where the chief question of management will no longer be the bargaining between enterprises and central authorities on regulators but the free economic maneuvering of profit-oriented enterprises.

This program aims to solve the problems arising from the increased difficulties of external economic conditions not by limiting international division of labor but by a widespread and increasingly efficient utilization of foreign trade opportunities. In doing this, it actively builds on the progress of relations with CEMA countries but also takes into account the slow rate with which socialist integration is progressing. Thus, in this regard it starts from the observation that at present the choke point of the economy is the potential for capitalist exports. Progress in this area is indispensible for satisfying import demand and, incidentally, for buying advanced technology. Under these conditions it envisages the transfer and widespread use of technology from highly industrialized countries not within the framework of a few major programs but in conjuntion with the development of export potential based on strengthening of the enterpreneurial spirit.[20]

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[20] On this subject see Rezso Nyers and Marton Tardos: "Which Economic Strategy Should we Choose," GAZDASAG, No 1, 1979.

9164
CSO: 2500

USE OF POTATOES AS LIVESTOCK FEED SUPPORTED

Warsaw TRYBUNA LUDU in Polish 21 Mar 80 p 5

[Article by Prof Dr Zdzislaw Grochowski: "Respect for the Potato"]

[Text] The necessity to decrease imports of feed and at the same time to increase livestock production forces us, on the one hand, to increase the production of grain, for example, by increasing the sowing area and, on the other hand, to manage grain and concentrated feeds more economically. Although there is no doubt about the need to increase sowing areas, there is a lot of discussion over whether this should be achieved by sacrificing fodder crops--as has been suggested, and which is possible mainly in socialized agriculture--or by sacrificing potatoes.

The latter solution, in my opinion, can take place only in private agriculture in which potato cultivation occupies 19 percent of the sowing area; that is, three times more than in socialized agriculture. But even in this case I suggest moderation, better and more reasonable use of potatoes, and not a radical limitation of cultivating them. Why?

It is undoubtedly easier to feed hogs with grain and industrial fodder and therefore it is not without significance for further increases in liveweight pork production. Together with the development of agriculture and concentration of production, there will be a growing tendency toward this, derived mainly from the pursuit to save direct labor and increase its productivity.

For these reasons, farms with large herds employ a technology of feeding based almost exclusively on concentrated feed. On peasant farms the use of concentrated feed has also been gradually increasing and the use of potatoes decreasing. For example, in farms keeping agricultural accounts for the Institute for Agricultural Economics, for a 100 kg increase in liveweight pork, the use of concentrated feed increased from 163 kg in the years 1951-55 to 262 kg in the year 1977-78; but, the use of potatoes decreased from 933 to 669, as did skimmed milk from 145 to 45 liters. The increased use of concentrated feed is a two-thirds substitute for potatoes and one-third for milk. It should be mentioned, parenthetically, that the entire decrease in the use of skimmed milk has taken place during the last few years when local centers and dairies were closed, which obviously accelerated the increase in grain consumption by peasant farms producing pork.

One should consider if it is advisable and if we should strive to intensify these tendencies under our conditions.

To understand the results of such actions, let us compare the size of the feed acreage, with and without potatoes, needed to produce 1 ton of liveweight pork. For comparison, let us take two blends of feed. The first would consist of 6.7 tons of potatoes, 1.1 tons of grain, and .9 tons of protein concentrate. Both blends have the necessary amount of digestable protein (460 kg) and feed units (above 4,000). The real net harvest from 1 hectare is, for grain, 2.35 tons; and for potatoes, 16.0 tons. Because in the above feed blend there are concentrates, the main components of which are from imports, they should be counted in the proper portion to grain in feed acreage based on the relation of grain prices and high-protein feed on the world market. This relation is 1:1.8, and after taking into account the difference in protein content of high-protein imported feed and concentrate, 1:16. In a feed blend containing potatoes, for 1 ton of liveweight pork production one needs 1.36 hectares; in the second--the grain blend--one needs 1.61 hectares. To produce, then, 1.7 million tons of liveweight pork (the present level of production on peasant farms), using the first feed blend we need 2,310,000 hectares; and using the second 2,740,000 hectares are needed; that is, 430,000 hectares more.

At present, on private farms about 11.5 million tons of potatoes are used as cattle feed from about 720,000 hectares. Conversion to a full-grain feeding technology and substituting potato cultivation with grain would require either a 430,000 hectare increase in area (at what cost?) or, without increasing the area, a decrease in pork production by about 260,000 tons.

Thus, the big difference in the acreage necessary to produce the same amount of liveweight pork with different amounts of potatoes and grain in the feed doses results from the fact that at the present level and proportions of harvests we get more nourishing elements from 1 hectare of potatoes than from 1 hectare of grain. In terms of growth of yield the difference will gradually decrease, because grain yields show a much stronger tendency to grow than do potato yields.

Arriving at a decision about what to feed, one should also consider, however, in the balance, higher labor and energy consumption in feeding cattle with potatoes. But even this does not demonstrate the unprofitability of the potato variant. From the economic point of view, only with a grain yield above 4.0 t/ha does it pay to switch to grain rations.

At the present level of grain harvest, the elimination of potatoes from hog feed and, at the same time from cultivation, would lead to a limitation in the possibility of increasing not only liveweight pork production, but also other animal products, because on peasant farms they feed potatoes also to other kinds of animals (about 50 percent of the total quantity).

The substitution of potatoes with concentrated feed cannot be avoided. It is unavoidably the future in feeding livestock but--and here I want to be well understood--at the present stage of the development of agriculture, and especially because of the difficulties in the grain balance, the process should not be accelerated under any conditions. In my opinion, we should, in parallel, increase the acreage of high-yield grain on soils extensively used up to now, and try to obtain higher yields of potatoes, try to use them better in feeding livestock, and suffer smaller losses in storing them.

9272
CSO: 2600

ROMANIA

PROGRESS IN URBANIZATION DISCUSSED

Bucharest ERA SOCIALISTA in Romanian No 6, 20 Mar 80 pp 35-37

[Article by Dr I. D. Adumitracesei of the "Gh. Asachi" Polytechnical Institute at Iasi: "The Result of the Balanced Territorial Development of the Country"]

[Text] The creation of a multilaterally development socialist society and the advancement of Romania towards communism includes, as an especially important component, the process of urbanization and the restructuring of the network of localities, especially through the formation of a large number of new cities. In the Program-Directive for the Economic-Social Development of Romania in a Territorial Structure for the 1981-1985 Period and in the Program adopted by the 12th Congress, broad actions are planned that are designed to stimulate this process and bring about the creation of new city centers and the transition to certain new stages of progress in the direction of improving the structure of the network of localities.

The option to increase the number of cities during the current stage of our country's development responds to certain real requirements. As is known, Romania, which entered the path to socialism with a poorly developed economy, had an unfavorable structure in its network of localities. While the density of villages was very high, that of the cities was very low, from two to three times smaller than in some developed European countries.

During the years of building socialism, the improvement of the territorial distribution of the forces of production brought about some positive changes in the structure of the network of localities. Thus, the average density of cities per 1,000 square kilometers [km^2] increased from .56 in 1948 to .72 in 1956 and .99 in 1970. At the same time, for villages it fell from 64 in 1956 to 55.4 in 1970.

As a result, the number of villages per each city decreased from 89 in 1966 to 55.7 in 1970. Despite the positive evolution recorded, the structure of the network of localities retained some characteristics that were undesired and inherited from the past. The restructuring of the network of localities on the basis of a rapid growth of the density of cities today represents, more than ever, an imperative for the harmonious development of economic and social affairs throughout the country so that the entire populace can benefit from a continually higher level of civilization.

The creation of a greater number of cities during the stage we are currently passing through is not only objectively necessary, but is also fully possible. During the first years of socialist construction, with the resources of the country being more limited, there was a push for the concentration of these resources and especially for the expansion of the existing cities. In the degree that Romania has gone beyond the stage of a poorly developed country and has entered, to a great degree, the stage of a developing nation, there has also been an increase in the resources allocated for the economic and social progress of the country and for the acceleration of the industrialization and urbanization processes, including the creation of new localities. The policy of our party of allocating a high rate of investments from the national income, as consistently promoted since the Ninth Party Congress, has ensured ever more favorable premises for the territorially balanced economic and social development of the country and for the creation of new cities and the restructuring of the network of localities.

The possibility that in this current stage numerous communal centers will become cities is transformed into reality, first of all, through the harmonious distribution of the forces of production throughout the country and the carrying out of a broad program to systematize localities. In defining the key points of this policy of the future, the Directives of the 12th Party Congress establish the indicator "total production per inhabitant" as the principal criterion for evaluating the level of economic-social development of each county. According to this criterion, a basic goal in the upcoming five year plan is the achievement in each county of a total production per inhabitant - in the areas of industry, agriculture, construction, transportation, service and other branches of the economy - of at least 70,000 lei annually. It is clear that the fulfillment of this objective will ensure a more complete agreement between the territorial economic and social development of the country and the size of the population of each county and each locality. This will thus accelerate the process of improving the counties that still have economic levels well below the national plan average and will create favorable premises for the appropriate development of all localities.

In addition to the key points regarding the territorial economic and social development of the country and based on these key points, the Directives of the 12th Party Congress contain a series of measures destined to effectively ensure the creation of a large number of new cities. First of all, beginning with the determining role of industrialization in carrying out the process of urbanization, it was established that in the total production per inhabitant, of the 70,000 lei per year 50,000 lei would come from industry. Secondly, it was planned that the size of the populations in the large cities and Bucharest would remain constant, in favor of accelerating the development of the small cities and the town centers selected to become cities. Thirdly, it was established that, in parallel with the development of heavy industry, there would be a rapid expansion of handicraft and small industry through the establishment of numerous units in the insufficiently developed villages and those in the course of being created. Finally, in accordance with the extension of industry and other economic activities, in each locality there is to be an increase in the living space and municipal and social-cultural facilities necessary for a civilized life. Just from these points the result is that the orientation of economic and social development, and especially of industry, on a territorial basis will permit the transformation of many town centers into new cities during the coming five year plan.

The carrying out of the provisions contained in the Party Program through 1990, specifically the creation of 300-400 new cities, will bring about a great increase with regards to the density of the urban network.

The fact that in a period of 15 years Romania will achieve nearly a tripling of the number of cities represents a true world record with regards to the dynamics of the urban network. Through the urban densities forecast to be attained in 1985 and 1990, our country will ever more closely approach the levels of certain developed European countries.

The Evolution of the Network of Cities in Romania

Year	Number of Cities	Density of Cities per 1,000 km2
1975	236	.99
1980	265	1.54
1985	505	2.13
1990	636	2.67

Through the current five year plan, great differences have been maintained between the counties with regards to the density of the network of cities, which is reflected in the differences between their levels of economic development. For example, in 1975, the density of cities per 1,000 km^2 varied between .32 (in Buzau County) and 2.97 (in Prahova County), while the national average was .99. Keeping this situation in mind, the optimization of the structure of the network of localities presupposes that the new cities will be created on a priority basis in those counties with lower urban densities, correspondingly directly investments on a territorial basis. By promoting this policy, the party ensures the gradual narrowing and equalization of the levels of economic and social development of the counties. "This," as comrade Nicolae Ceausescu pointed out, "truly corresponds to the general policy of our party, both in a social and national sense, for the appropriate development of all areas and for ensuring certain working and living conditions that are equal for all members of society and for all citizens of the country, regardless of their nationality."

It is known that the economic-social progress of each country is tied to its network of localities, especially its network of cities. Their number, size and territorial distribution represent not only effects of economic-social development, but also factors that influence this development. As a result, the creation of a number of cities during the stage of creating a multilaterally developed socialist society will exert a powerful influence upon the advancement of our country towards the party's program goals.

To the extent of the increase of its economic, cultural and sanitation potential, each new city will extend its relations with the localities within the surrounding microregion. The new cities will thus fulfill the role of polarizing microregional centers. Gradually each of them will come to influence, in numerous ways, several towns.

The Evolution of the Relationship Between Rural and Urban Localities in Romania

Year	The Number of Each Per City: Villages	Towns
1975	55.7	11.5
1980*	35.5	7.4
1985*	25.4	5.3
1990*	20.0	4.2

*Maintaining the number of villages and towns at the 1 January 1978 level, minus the villages scheduled to become cities.

As can be observed from the data presented, the continued reduction of the relationship between the number of villages and towns on one hand and the number of cities on the other hand, shows a powerful restructuring of the network of localities in Romania. On this basis, the possibility will be created for all cities, including the new ones, to exert a growing influence upon the rural localities in the surrounding microregion.

What are the principal directions in which the new cities will work as polarizing microregional centers?

First of all, the new cities will contribute to increasing the level of using natural resources throughout the country. As specified in the Directives of the 12th Party Congress, during the current stage the broadening and judicious management of our own raw materials and energy resources constitute a fundamental condition for the development of the entire economy at a high rate and ensuring the general progress of society. And, the centering of the development of the national economy upon a greater number of urban centers will bring natural resources into the economy and permit their use at higher levels not only at the overall level of each county, but also within the framework of each microregion. The relatively uniform demands upon the natural aboveground and underground resources throughout the nation will also favorably influence the maintenance of the ecological balance, ensuring a healthy natural environment for our people's working and living.

Secondly, the creation of new cities will contribute to a great degree to the rational use of the work force. The production capacities created in the town centers in the course of urbanization will attract available manpower resources from both the respective locality and the outlying areas. As a result, in 1985, in each county the number of persons employed per 1,000 inhabitants will be at least 400, while the extent of commuting will be reduced, especially in regards to the distance that must be travelled to work. The influence of the new urban centers in the direction of the rational use of the work force will be also achieved through the conditions offered by these centers for the training and improvement of personnel and for the mobilization and use of the creative energies of the workers.

Thirdly, the transformation of many town centers into urban centers will give a powerful push to the process of developing and modernizing agriculture. This effect will be determined by the growing need for agro-food products and agricultural raw materials in the new cities, as well as by the opportunities offered by these localities for practicing intensive, efficient agriculture within the framework of each microregion. "An important role in this regard," as comrade Nicolae Ceausescu stressed, "will be played by the unique agro-industrial councils that are designed to unify the activities of the state and cooperatist units and to achieve within this framework a better specialization and layout of crops."

Fourthly, the new cities will provide an ever more favorable framework for the sustained development of the non-agricultural branches. Each urban center is, principally, the result of the industrialization process and, at the same time, represents o premise for the continued extension of industry. The creation and development of each city requires a broad construction activity in order to achieve production, housing, and social-cultural-municipal facilities objectives. Likewise, each new city stimulates the development and diversification of services in order to satisfy its own needs and those of the surrounding microregion. The new cities will thus favorably influence the development of the non-agricultural branches through the infrastructure that is offered, through the professional training and provision of the necessary living space to the workers, and through the creation of certain appropriate supply conditions for the populace.

Fifthly, the creation of the new cities will contribute noticeably to raising the level of urbanization in our country. On one hand, the transformation of numerous town centers into cities will bring about an increase in the percentage of the urban population from 43.2 percent in 1975 to nearly 50 percent in 1980, to approximately 55 percent in 1985 and almost 65 percent in 1990, which will bring Romania close to the urbanization level of certain developed European countries. On the other hand, each new city will diffuse to the surrounding villages the material and spiritual elements of a more and more civilized life, contributing to the acceleration of the process of drawing the villages closer to the cities within the framework of the respective microregions and of gradually eliminating the essential differences between the urban and rural environment.

The intensity of the influence exerted by the new cities in the directions outlined above, as well as in other directions, depend upon the attractive force of each one of them. In order to act as a polarizing microregional center. each new city must have an appropriate economic, cultural and sanitation potential and must develop in relationship to the conditions it has available and within the role that was given to it within the overall network of localities. This presupposes, at the same time, that the new cities will be located in an even manner in each county, which will contribute to the elimination of the imbalances inherited from the past with regards to the distribution of cities in many of the counties.

The primary objective recorded in the Party's Program for the Creation of a Multilaterally Developed Socialist Society and the Advancement of Romania towards Communism, the creation of new cities at the rate and of the sizes outlined, reflects once again the creative force that the Romanian people have today, as well as the wise guidance of this force by the party towards those goals that will provide all the citizens of the country, regardless of their nationality, a continually higher level of civilization and well-being.

8724
CSO: 2700

ROMANIA

INDUSTRIAL CONSTRUCTION TO CONCENTRATE ON CHEMICAL PROJECTS

Bucharest ROMANIA LIBERA in Romanian 4 Jan 80 pp 1, 5

[Interview with Ion Stanescu, minister state secretary in the Ministry of Industrial Construction and head of the Department of Construction-Assembly for the Chemical Industry and Refineries, by M. Radian: "The Chemical Industry, a Recipient of a Large Volume of Investments"; date and place not given]

> [Text] Taking into account that the work of the chemical industry possesses a significant percentage in the whole of the development of the activity of industrial construction, we asked Comrade Ion Stanescu, minister state secretary in the Ministry of Industrial Construction and head of the Department of Construction-Assembly for the Chemical Industry and Refineries, to answer for us a few questions about the preparation of the building-assembly work for this important industrial branch, provided in the plan for 1980, the last year of the current five-year period.

[Ion Stanescu] Aware of the fact that good preparation of the 1980 plan is directly connected with the fulfillment of the tasks that devolved upon us in the recently concluded year, I should begin by stating that, as a result of the firm steps taken on the instructions of the secretary general of the party in order to put into operation the investment facilities in the plan, beginning with September 1979 the rate of installation of technological equipment has risen substantially, with the value of the installed equipment exceeding 1 billion lei per month. The growth of the rate of installation has permitted the commissioning of 64 important production capacities, of which I mention the atmospheric distillation plants at the Borzesti and Midia-Navodari refineries, the coking plants at the Darmanesti and Teleajen refineries, the polyisoprene rubber plant at the Brazi Petro-Chemical Combine, the ammonia plant at the Bacau Chemical Fertilizer Combine, 3 capacities for utilization of pyrite ash at the Tirgu Magurele Chemical Combine, sodium bichromate at the Tirnaveni Chemical Combine, new plastic-processing capacities in Dragasani, Sfintu Gheorghe, Focsani, Iasi and Nasaud and at "Naprochim" in Cluj-Napoca, process lines at the enterprises for rubber technical items in Brasov, Tirgu Jiu and Jilava-Bucharest, additional capacities for dyes at "Colorom" in Codlea, new pesticide-producing plants--achieved on a basis of Romanian research--at the Rimnicu Vilcea Chemical Combine and the Borzesti Petrochemical Combine, and so on.

With the manpower and material resources being focused with priority on the objectives of the chemical industry, the work was able to be finished and another 25 important production capacities are in technological tests, including catalytic cracking and petroleum and diesel-oil hydrofining at the Teleagen Refinery, atmospheric distillation, n-paraffin and dimethyl terephthalate at the Pitesti Petrochemical Combine, reactive isomers and bisphenol at the Borzesti Petrochemical Combine, oxoalcohols at "Solventul" in Timisoara, the ammonia plant at the Fagaras Chemical Combine, the furfural plant in Slobozia and at "Roniprot" in Curtea de Arges, and so on.

Very advanced working studies have also been provided for 25 capacities, with the technological tests to be begun in the first quarter of 1980.

I would like to point out that although building-assembly work representing an 11-percent increase in comparison with the preceding year was done for the chemical industry in 1979, nevertheless, due to shortcomings, difficulties and even mistakes appearing in the activity both of the builders and of the customers and the equipment suppliers, certain delays in putting production capacities into operation on the established dates were registered. We feel that we now have all the conditions created for making up the delays and putting into operation in 1980 the lagging capacities in the current five-year plan, thereby creating optimum conditions for fulfilling the provisions of the 1981-1985 five-year plan.

[Question] Please, if you are agreeable, describe for our readers the stage of the preparation of the production in 1980.

[Answer] This being the last year of the five-year period, the main objectives in the chemical industry expected to be attained in the current five-year period are to be finalized this year. The 1980 plan provides for the commissioning of 185 new production capacities in various fields of the chemical industry. Although the 1980 plan for building-assembly production is comparable to the level in 1979 from a viewpoint of value, the tasks for next year will be much more difficult due to the large number of facilities and capacities that are to be put into operation, an activity that entails a considerable volume of finishing work, mechanical and technological tests, and much other highly technical work. Important capacities are to be put into operation at the big Midia-Navodari, Brazi, Teleagen and Borzesti petrochemical combines, at the chemical fertilizer combines in Bacau, Arad and Slobozia, at the "Azur" Lacquer and Paint Enterprise and the Timisoara Detergent Enterprise, and at the new chemical combines and enterprises begun in this five-year period in Vaslui, Roman, Cimpulung Muscel, Zalau, Turnu Severin, Caracal, Nasaud and so on. As you see, it is a program that requires a great mobilization of forces and good preparation of the investments.

/Question/ And how are you doing with these preparations?

/Answer/ Together with the Ministry of the Chemical Industry, we have established suitable measures for finalizing with priority the investments of the current five-year period. Moreover, we should state that for 1980 the Ministry of the Chemical Industry has provided a higher degree of preparation of the investments in comparison with the previous years: on 30 November 1979 we had received the working documentation for 88.6 percent of the annual plan value, while for 1979, on the same date, we had only 70.3 percent. Although the progress is evident, we should point out, however, that this year, too, it was not possible to provide the entire working documentation at least 3 months before the start of the plan year, as the legal regulations stipulate. The preparation of the facilities that are to be started in 1980 presents an even more unsatisfactory situation. On 30 November, in the plan of the Ministry of Industrial Construction there were 76 new facilities for which the Ministry of the Chemical Industry had not provided the working documentation.

/Question/ Really, are not these delays of a nature to affect the fulfillment of the 1980 plan?

/Answer/ We express our conviction that our customer, through the design institutes, will take all the steps to respect its obligations. Moreover, I want to inform the readers that we have the entire working documentation provided for the first quarter of 1980, just as, due to the help received from the Ministry of Supply and the supply units, we have also managed to provide to a greater extent the necessary material resources. This will allow us to achieve in the first quarter of 1980 about 25 percent of the annual plan value.

/Question/ What can you tell us about the prospects of construction for the chemical industry in the 1981-1985 five-year period?

/Answer/ The 12th party congress has established for the next five-year period, too, a very high average annual rate of development in the chemical industry: nearly 10 percent, a rate far higher than in other branches. For attaining such a rate of growth of production, the directives of the 12th congress provide for the allocation, in the 1981-1985 five-year period too, of large amounts of investment funds earmarked for chemistry, with the volume of building-assembly production continuing to have a high percentage, about one-third, in the plan of our ministry.

In the next five-year period too, we, the builders, will be present on the current big Midia-Navodari, Brazi, Pitesti, Teleajen and Borzesti petrochemical platforms, where we will achieve new and important capacities at the existing combines. We will achieve other new units of the chemical industry, including a petrochemical platform in Corabia. We will carry out development and modernizations at the refineries in Brasov and Cimpina and at "Vega" in Ploiesti. We will carry out the second stage at the Cimpulung Muscel Synthetic Yarn Combine and developments and new plans for chemical yearns and fibers in Savinesti, Botosani, Dorohoi, Radauti, Baia Mare, Husi, Vatra Dornei and Carbunesti-Gorj. We will achieve new plastic-processing units in Beius, Negresti-Vaslui, Hirlau, Margina-Timis, Carei, Sighetul Marmatiei, Gura Humorului, Orsova and Cernavoda and new units for lacquers and paints in Vaslui, Craiova, Botosani, Tirgoviste, Odorhei and Nasaud, for cosmetic products in Suceava, for medicines in Buzau, for detergents in Baia Sprie and for antibiotics in Brezoi, a polyurethane plant in Rimnicu Vilcea, a plant for utilization of potassium salts in Tazlau, and new units for equipment and spare parts for the chemical industry in Satu Mare, Odorheiul Secuiesc, Focsani and Toplita, along with developing the existing units.

/Question/ The documents of the congress stressed in particular the task of achieving a more efficient activity in building-assembly. What do you propose in this regard?

/Answer/ Besides the problems connected with preparing the investments and delivering the equipment, in particular, the construction solutions for the new investment facilities concern us. To this end, our ministry, in collaboration with the Central Institute for Construction Research, Design and Direction, the State General Inspectorate for Investment-Construction and the design institutes, will act to adopt construction solutions that permit the growth of the degree of industrialization of execution, the expansion of the prefabrication of the work, and the transformation of the sites more and more into highly productive installation units.

All these things, including better organization, more sensible use of the work force, and better management of materials on the sites, will lead to a significant rise in the economic efficiency of the activity in construction. Along this line, we feel that the priority execution of underground work and utilities, with the execution of the basic work being done afterward, will play an important role during the next five-year period. This will make it necessary for the working documentation corresponding to these categories of work to be provided with priority and on the dates stipulated in the timetables for spreading out the investments.

For attaining all these objectives, the Ministry of Industrial Construction will act in close collaboration with the design institutes of the Ministry of the Chemical Industry, which are designing the new investment facilities, with the plants supplying technological equipment, with all the factors that participate in carrying out this magnificent program for development of Romanian chemistry.

12105
CSO: 2700

YUGOSLAVIA

BRIEFS

DUTCH ECONOMIC RELATIONS--The talks on promoting the economic cooperation between Yugoslavia and The Netherlands ended the day before yesterday with the signing of a protocol on the eighth session of the Yugoslav-Dutch Mixed Commission for Economic, Industrial and Technical Cooperation. In the talks the two delegations paid special attention--in addition to the commodity exchange--to successful agricultural cooperation. That is particularly important because the Yugoslav deficit in the commodity exchange with The Netherlands results mainly from the large imports of agricultural products and agricultural equipment. The results of last year's commodity exchange are very good--the commodity exchange, worth $394 million, was virtually balanced. As is expected, the value of trade will reach the value of $500 million this year. [Text] [Belgrade POLITIKA in Serbo-Croatian 30 Mar 80 p 2 AU]

TECHNICAL COOPERATION WITH SUDAN--The third regular session of the Yugoslav-Sudanese Committee for Scientific-Technical Cooperation has begun in Khartoum. The Yugoslav delegation is led by Milovan Zidar, member of the Federal Executive Council and president of the Federal Committee for Agriculture. Mutual satisfaction was expressed in the talks over the past results achieved in economic cooperation, and interest in and possibilities for the further expansion of commodity exchange, cooperation in the field of agriculture and cooperation in capital investment were pointed out. [Text] [Belgrade BORBA in Serbo-Croatian 1 Apr 80 p 6 AU]

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